# WESTERN INDUSTRY

**...velopment of television in the West is expected to boom electronics industry to meet demand for sets. For details see Page 5.**

*...ISSUE: ... Saves Boat Sanding at a ... Protection Seals; Organizing Your ... Training Program; Smog Problem Not New—You May Get It, Too! Cooling Towers Save ... Costs at Holly Refinery; Pallet System a Design Factor; Castings in Light Metals; ...ncial and Managerial Controls Shift Westward; The Impaired Worker Is "Good Business"*

**...ive Cents** VOLUME XIII NUMBER 11 **November, 1948**

# Assured Dependabilit

## FOR HANDLING HEAVY LO

THERE'S good reason why experienced users give the call to Hevi-Lifts for their toughest handling jobs. It's the hoist that leads the field in heavy-duty design — that handles full capacity loads dependably — safely — year after year. And without the petty annoyances and breakdowns that cause delays.

When you handle costly loads, you want the best. You need it. And it costs you less in the long run.

P&H Hevi-Lifts are available with 5-step variable speed push-button control, offering a change of pace for all motions in lifting, traveling and lowering. Call in a P&H materials handling engineer, or write for literature.

### These *ADDED VALUES* are Standard Equipment on P&H Hevi-Lifts

SAFER—P&H's true motor ratings insure against failure at full capacity loads and speeds. Thermal overload protection prevents motor burn-outs. Control current reduced to 110 volts at push-button. Crane type limit switch and double brakes provide maximum safety.

LIFETIME CONSTRUCTION — Precision construction — shaved gears — grease-sealed bearings — moisture-proof, dust-proof, acid-proof.

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Handle it "thru-the-air" at lower cost

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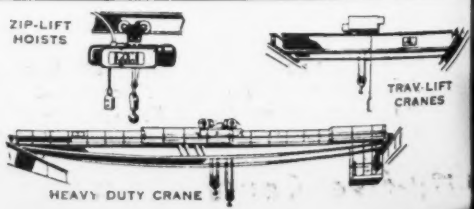
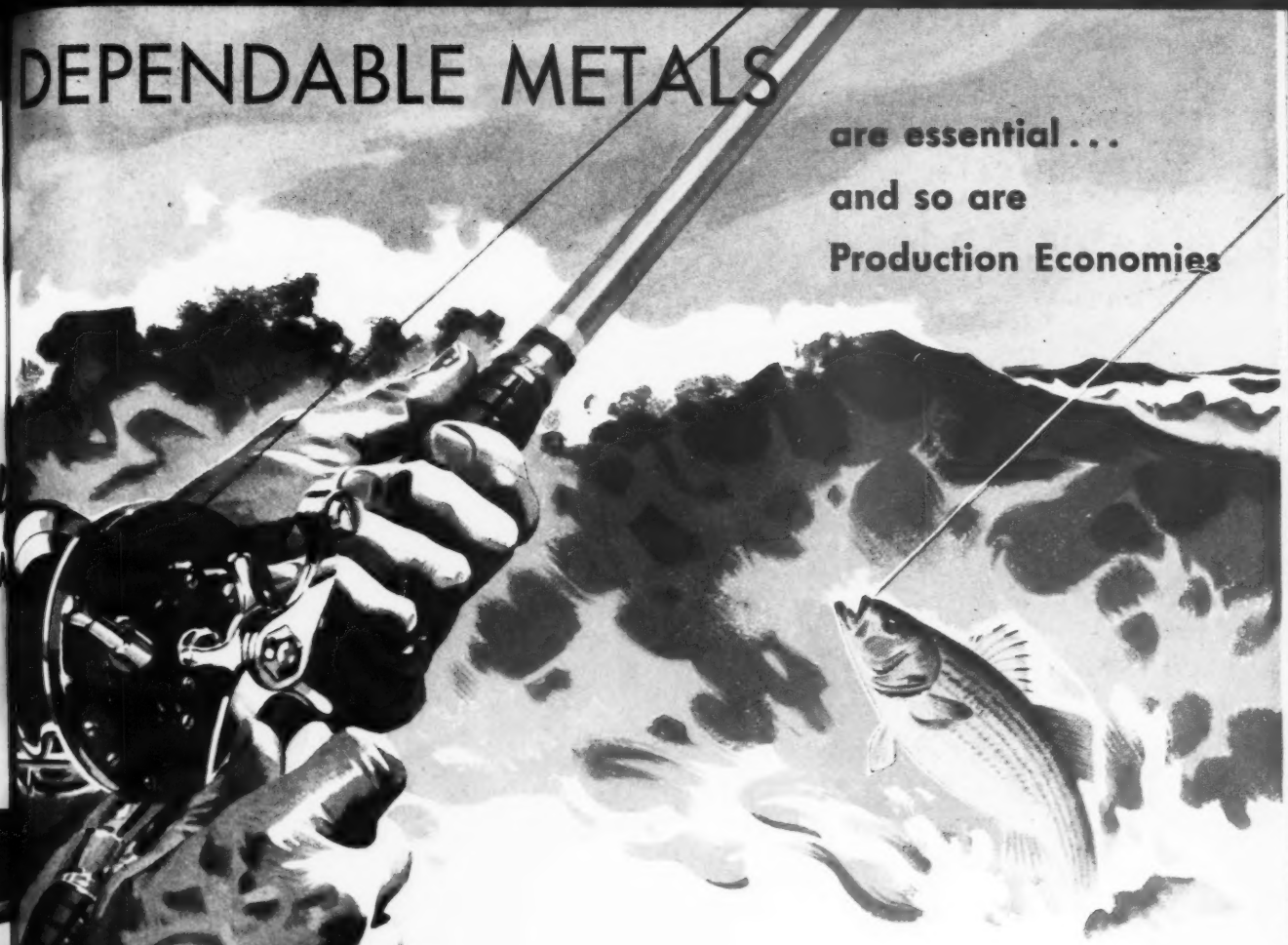
HEVI-LIFT HOISTS



# DEPENDABLE METALS

## are essential . . . and so are Production Economies

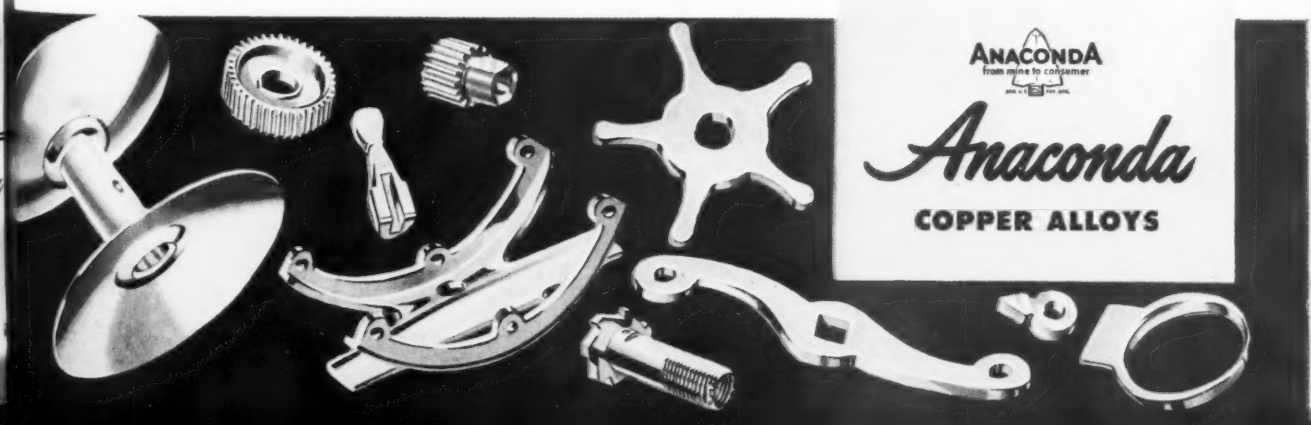


The more you examine a well-made fishing reel the more apparent it becomes that its modest cost is a high tribute to the manufacturer's efficiency. Here also is impressive evidence of the advantages that make brass, bronze, and other copper alloys so indispensable where high quality and low cost must be combined.

This reel is the "Bay City No. 112," made by Ocean City Mfg. Co., Philadelphia. It contains more than 50 copper alloy parts—made from seven different alloys in strip and rod form. All are standard Anaconda Metals.

Free-cutting brass rod is used for most machined parts. The precision cut gears are of leaded phosphor bronze and hardware bronze. Stamped parts such as stand, spool flanges, handle and click are of brass and nickel silver strip. External parts made from these alloys are given a durable chromium plate at minimum cost.

So here's another case where copper alloys were selected to meet known standards for fabrication and product performance. *Preliminary result:* such manufacturing economies as accurate machining at high speeds, long tool life, high salvage value of scrap and low finishing cost. *End result:* a rustproof, dependable and long-lasting product—surprisingly moderate in cost. 48117



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# *Everybody knows*

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*Anaconda*
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*This Month in*

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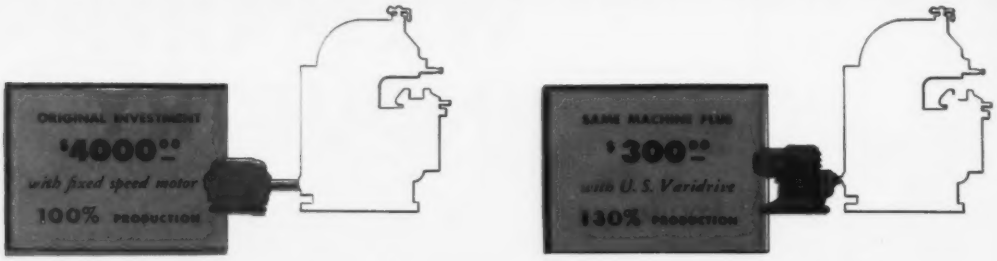
**Front Cover**

Television camera backed by huge parabolic reflector atop Mutual-Don Lee Station, Los Angeles, represents tremendous new potential for industrial West, since this electronic wonder is growing so fast. Reflector picks up beams from remote transmitters, steps up power, re-beams programs from Malibu to Mexico.

# HOW TO GET MORE OUTPUT FROM YOUR MACHINES

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## VARIDRIVES improve machine production

1 Regulate speed of machinery to compensate for variation in workers' abilities.

2 Enable one machine to process different sizes, shapes, and material of product.

3 Change rate of speed of belt, screw, bucket, flight, or any other type of conveyor.

4 Control time of drying, heating, baking, cooking, chemical action, soaking, etc.

5 Find correct speed for new processes or methods, adjusting to most efficient value.

6 Continuously change rotary speeds to maintain constant surface or peripheral speed.

7 Provide variable speeds for testing and calibrating equipment and instruments.

8 Vary pump capacity, pressure, or suction.

9 Adjust speed to compensate for changes in viscosity, temperature, humidity, or quantity while material is being processed.

10 Maintain constant temperature, tension, liquid level, pressure, flow, or any other factor which varies when uncontrolled.

11 Alter rate of feed of material to cutters, grinders, crushers, etc., depending on thickness, hardness and condition of equipment.

12 Reduce set up time when changing machines to handle different sizes, or match speeds of machines which must operate together.

13 Obtain correct flow of air or gas from blowers, air conditioning fans, burners, etc.

14 Correct troubles such as vibration, poor finish, overheating, etc., due to wrong speed.

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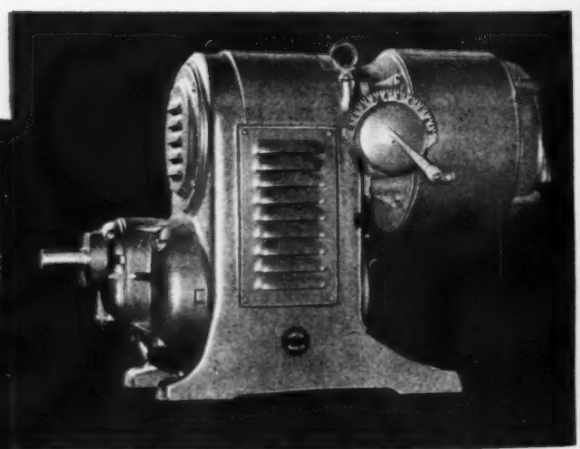
*... The miracle motor with 1000's of speeds*

**1 to 10,000 RPM** **¼ to 50 H.P.**



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4. Design assemblies for fewer, stronger fasteners
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7. Simplify purchasing by using one supplier's complete line
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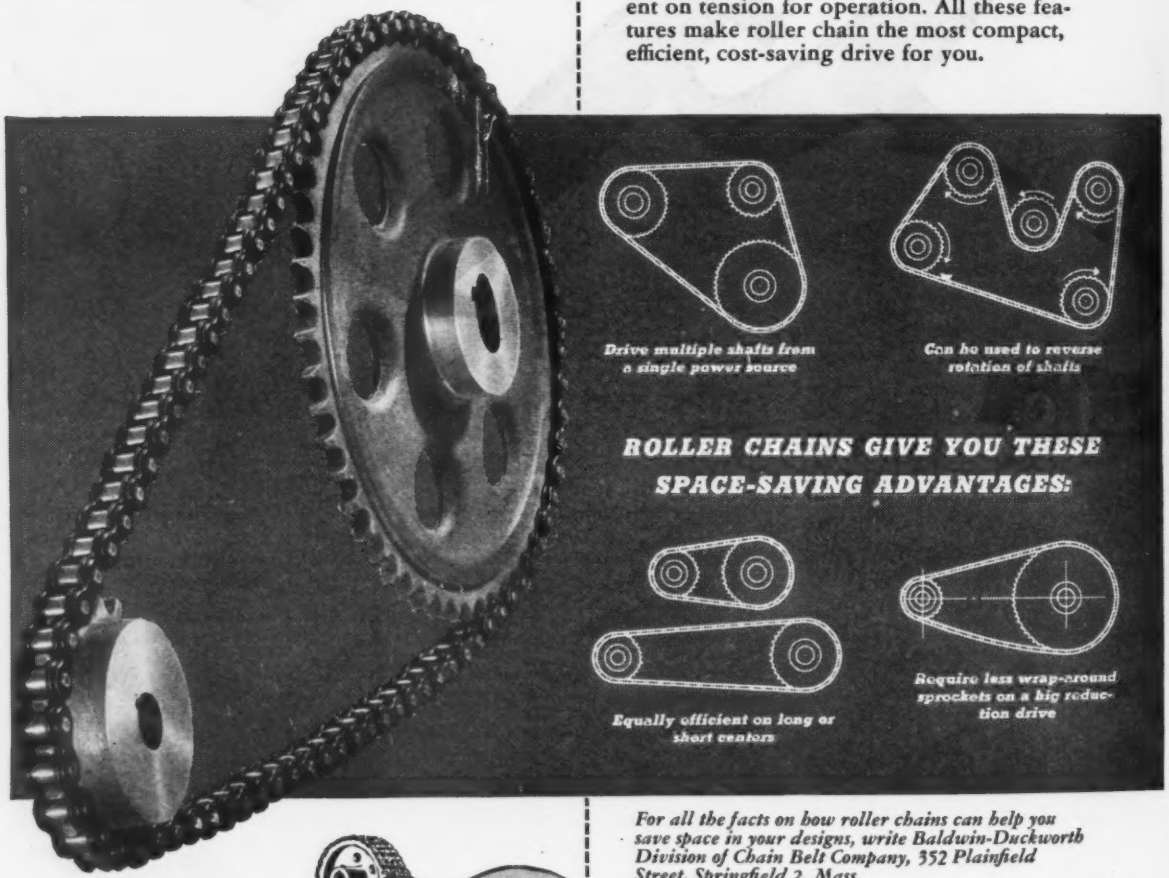
Drive multiple shafts from a single power source
Can be used to reverse rotation of shafts
ROLLER CHAINS GIVE YOU THESE SPACE-SAVING ADVANTAGES:
Equally efficient on long or short centers
Require less wrap-around sprockets on a big reduction drive

*For all the facts on how roller chains can help you save space in your designs, write Baldwin-Duckworth Division of Chain Belt Company, 352 Plainfield Street, Springfield 2, Mass.*

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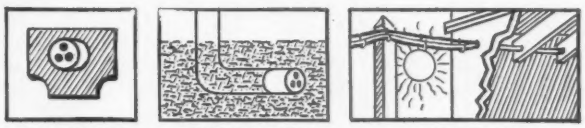
Durasheath offers high tensile strength and resistance to impact and abrasion—*plus* extreme flexibility that makes it easier to handle. Also, Durasheath resists moisture, acids and alkalies generally found in the soil, eliminates problems of electrolysis, corrosion and extremes in temperature and is highly resistant to flame—making it possible to use a single type and size of cable in runs that are partly aerial, partly underground or in conduit.

For complete information, write for Publication C-27.



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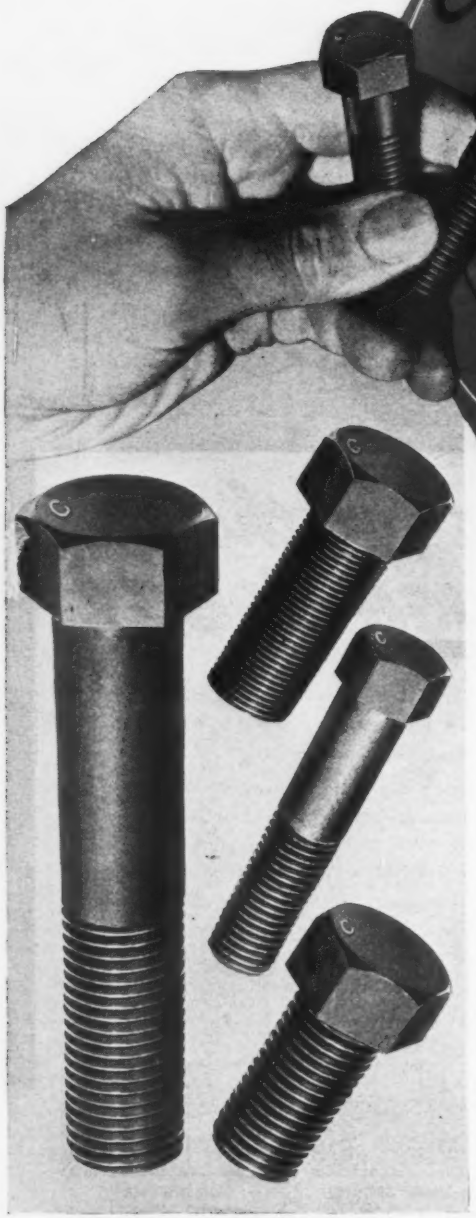

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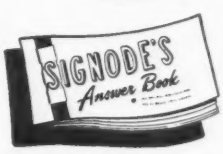


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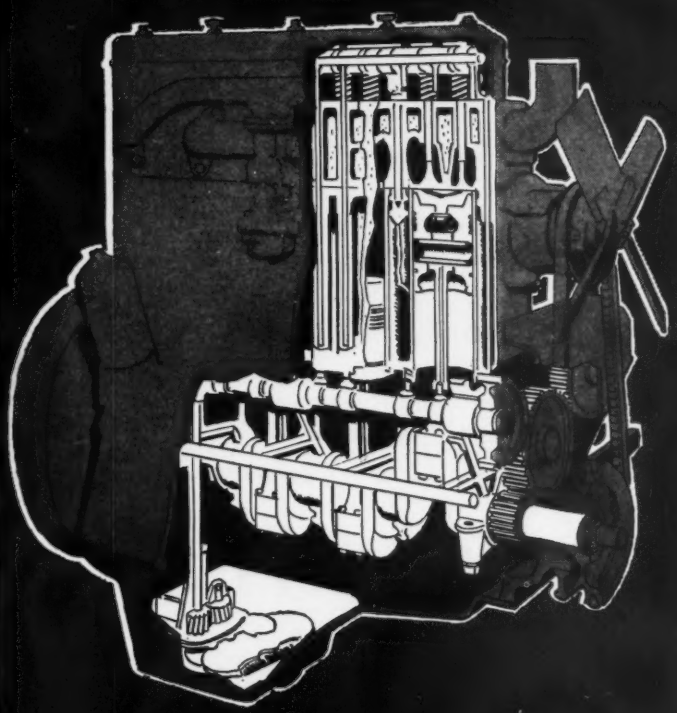

**For full information on T5X—the famous purple oil—phone your local Union Oil Representative or write Sales Department, Union Oil Company. Los Angeles 14, California.**

**HERE ARE THE REASONS WHY:**

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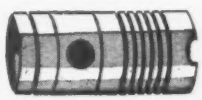

**SECOND, T5X** contains an exclusive detergent compound that retards sludge formation to a degree never before attained! Thus oil lines, ring grooves and pistons stay clean longer!

**THIRD, T5X** reduces wear to a minimum! A special inhibitor in T5X greatly retards oxidation and gives high heat stability. A neutralizing agent protects against corrosion and rust. Another ingredient suppresses foaming.

**FOURTH, T5X** forms an extremely tenacious and enduring oil film that gives maximum protection against scuffing and seizure.

*T5X gets its distinctive color from an exclusive ingredient that helps give the oil its remarkable stability.

76

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OF CALIFORNIA

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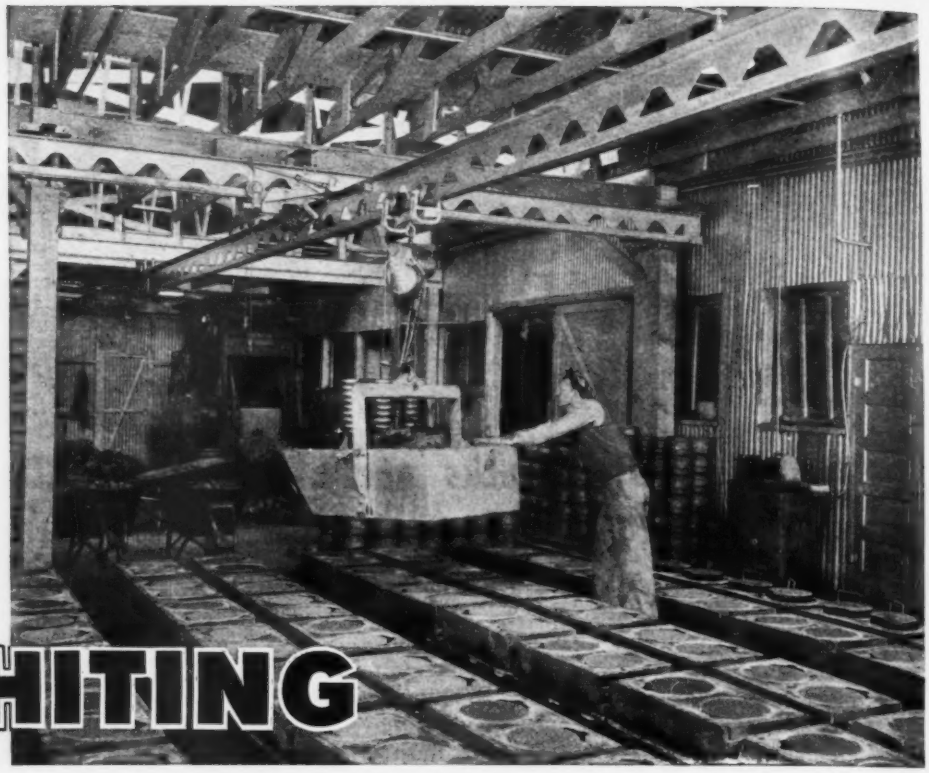

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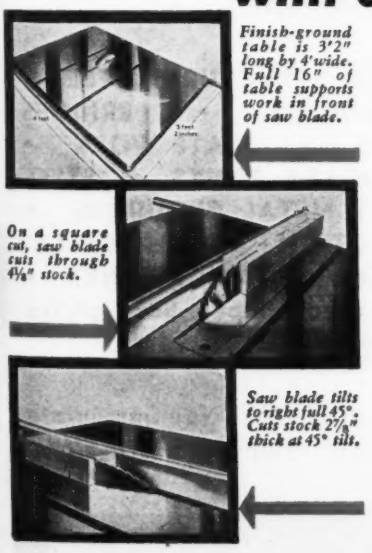

*Finish-ground table is 3'2" long by 4' wide. Full 16" of table supports work in front of saw blade.*

*On a square cut, saw blade cuts through 4⅛" stock.*

*Saw blade tilts to right full 45°. Cuts stock 2⅞" thick at 45° tilt.*

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- Cut-off work
- Compound angular cutting
- Angular cutting
- Rabbeting
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It's got plenty of power — this new Delta 12" Tilting-Arbor Saw. You can use a 3 HP or 5 HP motor. Four V-belt drive (with motor and arbor on a common cradle) gives this machine a positive drive.

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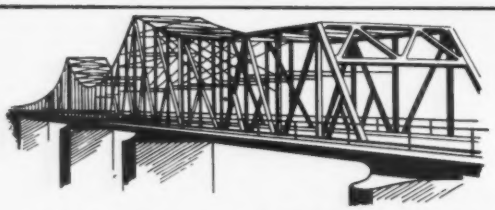
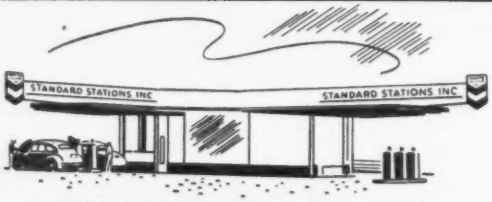


HIGHWAY AND RAILROAD GIRDER AND TRUSS BRIDGES

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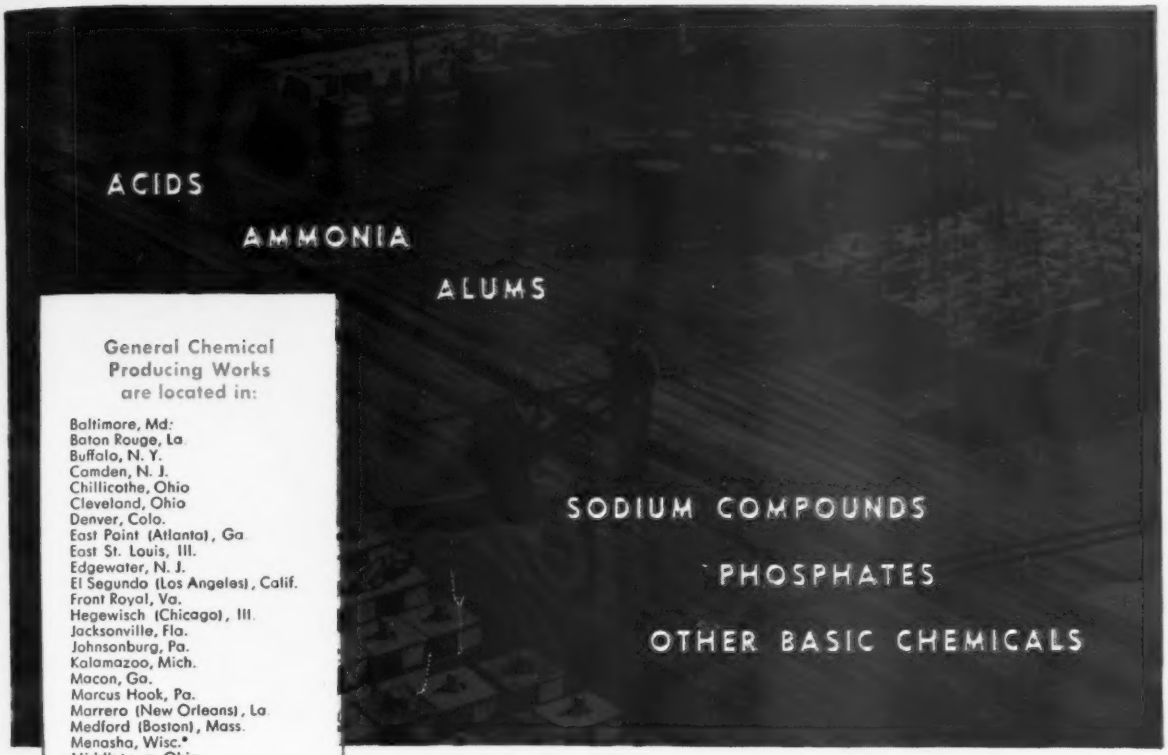


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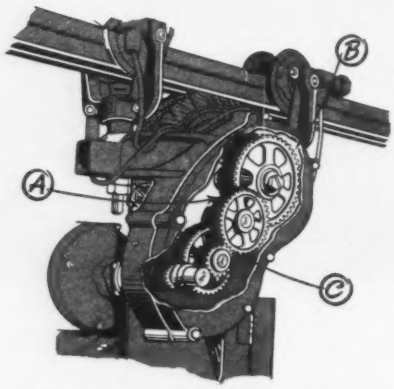
CASE 1062 -- MAINTAINING LUBE FILM ON HEAVY-DUTY GEARS.




HOIST GEAR UNIT FOR OVERHEAD CRANE

Viscous and tacky Calol Vistac Oils stuck tight under extreme pressures on hoist gears. Efficient for all heavy-duty gears, like industrial reduction sets. Come in six grades, 9X (SAE 10) to 45X (SAE 40). Apply by forced-feed or gravity lubricators, bottle- or wick-oilers.

A. Contain oiliness and extreme-pressure compounds. Tough film won't rupture, even on slow-moving gears with extreme pressures on wide area for long time.

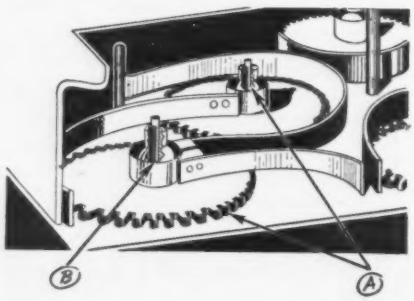
B. Economical - little required to provide adequate lubrication and dissipate heat. Resist highest operating temperatures.

C. High affinity for metal maintains lubricating film, reduces power loss and wear.

Calol Vistac Oils also recommended for lubrication of air hammers, rock drills and other air-powered tools ... atomize quickly and stay fluid at low temperatures.

CASE 1068--ELIMINATING DANGER OF FOOD CONTAMINATION BY MACHINE GREASE.

SECTION OF ANDERSON DISK EXHAUSTER




No taste, odor or color was imparted to food being handled by machines when Calol White Grease was used to lubricate them. The grease often was close to the food and sometimes contacted it. Comes in three grades to meet various conditions: Nos. 1, 2 and 3.

Chemically pure - made with white oil that passes all requirements of U. S. Pharmacopoeia ... is not absorbed into the human system.

A. Provides a tough lubricating film on machine bearing surfaces and reduces wear.

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Lightest grade is fluid for use on such machines as pumps and closing machines in canneries.

Calol White Grease gives outstanding service in these and other food-handling machines: Exhausters, pumps, graders, preheaters. blanchers, finishers, pulpers.

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FOR EVERY NEED A **STANDARD OF CALIFORNIA** JOB-PROVED PRODUCT

# In Our Mail Box

## Mechanized Mining

*Editor, Western Industry:*

In my opinion there were several features of the American Mining Congress convention in San Francisco that are worthy of comment. One is the large attendance of representative mining men from all parts of the country and their interest in the comprehensive exhibition of mining machinery and equipment.

This indicates activity on the part of the metal mining industry to mechanize operations for the purpose of reducing costs and increasing production; also the need to handle lower grade ores in larger tonnages and to process more complex ores than in the past in order to meet the increasing demands of metals for growing industrialization and defense requirements. Purchase and installation of the mining machinery and equipment displayed involves heavy capital expenditures.

A similar trend was evident in the operating sessions where papers were considered covering advances in milling practices, automatic control of milling plants, mechanization of mines, large-scale open pit and dredging practices and underground mining of large low grade ore bodies at Butte and in the Coeur d'Alene district.

In the general sessions probably the most significant development was the agreement that greater incentives were needed to attract venture capital to the mining industry and to bring about increased metal production. It was agreed in the discussions that Federal taxes now remove incentive for effort and investment in risk enterprises such as are essential to the discovery of additional mineral reserves.

Revision should provide that the combined effect of corporate and individual taxes must not destroy the incentive to risk money in endeavoring to develop mining enterprises by leaving little or no income for the investor in case the venture proves profitable. It was thought also that costs of development, exploration and research should be allowed as part of the operating expenses of mines.

Existing taxes have seriously diminished the incentive for prospecting, exploration and development of mineral areas with the result that fewer mines are being opened. This is particularly true because of the high cost of machinery and construction and the heavy capital expenditures now required to equip and build a mining plant.

OTTO HERRES
Vice-president
Combined Metals Reduction Co.
Salt Lake City, Utah.

## Less Confusing

*Editor, Western Industry:*

The article by Mr. Schaphorst on page 95 of your September issue on the efficiency of piston type airplane engines is substantially correct, although the wording in the third sentence in the third paragraph ("At low spark advance settings and the same mechanical efficiency the brake thermal efficiency would be roughly 30 to 31 per cent") is rather confusing. The sentence might be clearer if stated as follows:

"At a value of 85 per cent full throttle mechanical efficiency, the overall brake thermal efficiency of an aircraft engine is approximately 33 per cent in the cruising range."

If more information on this subject is desired, the following references are suggested:

"Engines Compounded for More Power" —E. F. Pierce & H. W. Welch. S.A.E. Journal dated January, 1948.

"The Internal Combustion Engine"— Taylor & Taylor. Published by Interna-

*(Continued on page 23)*

# EDITORIAL COMMENT

## What Use is the RFC?

IN THE house-cleaning at Washington that the Republicans promise for next year, let us hope that the Reconstruction Finance Corporation will be brought out of the dim recesses in which it functions into the daylight of public view, so that all the West can see whether it should be kept as a necessary piece of economic furniture, or thrown out in the dust-heap as a useless political toy.

When first established by President Hoover, it was intended to be an emergency instrument to bail out a sinking national business economy. But that was nearly 20 years ago and business survived.

Now RFC seems to be tending toward supplying that need of "venture capital" which we hear so much about, but if that observation is correct, why should the government be in the "venture capital" business except for international protection, as seems to be the case with the Marshall Plan? Why should it be loaning money to young enterprises struggling to get on their feet, or enterprises struggling to be bigger than they are now?

Why should everyone's money, because if RFC operates at a deficit the loss has to be made up out of our income taxes, be risked to enable business enterprises to succeed? If these loans are sound, why should the opportunity and responsibility of making them be taken away from private enterprise institutions like banks, insurance companies, or groups of investors? And if not sound, why is the government responsible for covering up the poor judgment of someone else?

Four examples of Reconstruction Finance Corporation financing in the West could well be explained by its top officials in order to let the West know what RFC considers to be its function in the Western economy, so that the West in turn could voice its approval or objection to Congress. Chronologically, these examples are:

1. Financing of the Reynolds Metals aluminum reduction works at Longview, Washington, before the war. Why should this have been done by a government institution, rather than by private risk capital? If it was to set up competition against Alcoa's monopoly, should not the government have announced the fact and offered this competitive opportunity to anyone desiring to get into the aluminum business? Also, was it RFC's right to risk the taxes paid by the steel, zinc and copper industries for promoting the development of a competitive metal?

2. The Fontana steel mill loan, which already has been widely and voluminously discussed. If this was an essential step in financing the war, should RFC set up a separate classification of war loans and treat them differently from prewar and postwar loans?

3. The loan of $200,000 to a small manufacturing establishment in San Jose, California, to develop an apricot pitting machine, which has been considered an inevitable development if canned and dried apricots were to survive today's pressure of rising production costs. Why should not the growers and packers of apricots shoulder this development expense, instead of risking the money of Washington and Utah pea canners, for example?

4. A recent proposed loan of $5,000,000 to help a private syndicate finance the purchase of Rosenberg Bros. & Co., the dominant corporation in the dried fruit packing industry of California, from the hands of a Chicago financier. He previously had engineered a combination of Chicago wholesale grocery houses, and the Department of Justice frowned on his subsequent acquisition of Rosenberg Bros. Why should the income tax money of Idaho potato growers, for example, or Oregon lumberjacks or even Harry Bridges' striking stevedores, be risked to help the dried fruit industry?

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AUTOGRAPHIC REGISTERS AND REGISTER FORMS

**MAIL BOX**—*(Continued from page 21)*

tional Texabook Co., Scranton, Pa.
"Aircraft Power Plants" — Frass. Published by McGraw Hill Publishing Co., New York.

EDWARD C. WELLS
Vice President - Engineering
Boeing Airplane Company
Seattle Division

### Sale of Rosenberg Bros. Is Called Off

Negotiations for the purchase of Rosenberg Bros. & Co., San Francisco, world's largest dealers in dried fruits, by Blair Holdings Corporation, have been abandoned, according to a simultaneous announcement by Blair and Nathan Cummings, president of the Cummings Corporation, Chicago, present owners of the firm. It had previously been reported that the sale was virtually concluded for an estimated $21,000,000.

Arthur C. Oppenheimer, who has served Rosenberg Bros. & Co. for 49 years, is slated to remain as general manager and director, according to Mr. Cummings. He further stated that no change in grower and employee relations or marketing policies was contemplated. The company will be maintained as a separate, independent operating organization.

### Shell Gets Award

Shell Development Company, research and development affiliate of Shell Oil Company and Shell Chemical Corporation, with laboratories in Emeryville, California, will receive this year's award for Chemical Engineering Achievement, sponsored by *Chemical Engineering*.

The award is made in recognition of Shell's successful synthesis of glycerine for the first time on a commercial scale. It also recognizes a long-time program of pioneering in petroleum chemicals and other outstanding applications of chemical engineering in the petroleum industry.

### Bethlehem Opens New Seattle Bolt & Nut Shop

Old-timers have difficulty in recognizing the old plant of Pacific Coast Forge Company at Seattle since it has been rebuilt and re-equipped by the Bethlehem Pacific Coast Steel Corporation. More than $500,000 has been spent on the project, and visitors were recently given a look at the new bolt and nut shop.

New machinery installed and on order includes the most modern heading, threading, nut-making and tapping equipment. Both hot forged and cold formed bolt and nut items are being turned out on a production line basis, and all machinery has been painted in a "dynamic color scheme" for promotion of efficiency and safe working conditions.

*(Continued on page 25)*

*Use* COLSON *Casters*

Here's a ball bearing swivel caster especially built for heavy duty work. It's skillfully designed to include every feature of Colson superiority to assure an exceptional unit for long, hard wear. The fork is stamped out of one piece of heavy gage steel, strong and correctly designed. Big diameter ball races in the swivel bearings are fitted with large chrome steel balls.

The wheel axle is always in line vertically with the swivel bearing, supporting the load in the most efficient manner. Pressure type lubricating fittings provide easy lubrication. Perfectly aligned throughout and built to stay that way.

*This caster is but one of 188 in the big Colson line. Get the full details about both heavy and light duty Colson Casters in the big 72 page illustrated catalog. Write today on your letterhead.*

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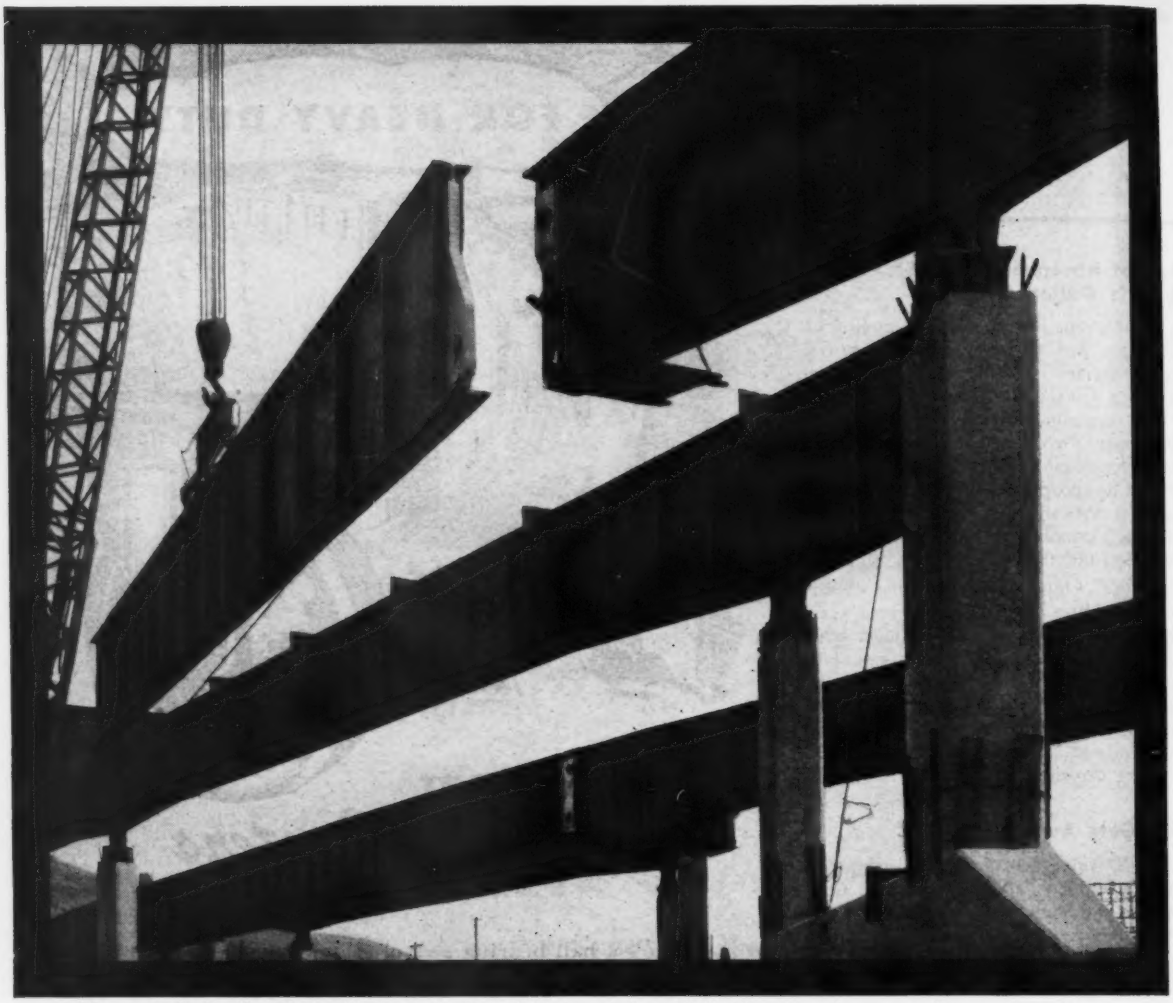


**More roads for the West** with the help of steel. 137-ton girders 120 feet long are shown speeding construction of two overpasses near South San Francisco where the new Bayshore Freeway broadjumps Southern Pacific tracks.

# Steel is building the West | for Today... for the Future

Steel for the West... more and more of it... is coming from the great mills of United States Steel. And here in the West, steel is doing a big job. Its fabricating speed helps the West build fast. Its durability helps the West build permanently.

Columbia's expanding, modern facilities are turning out more steel than ever. And Columbia, as Western producing member of United States Steel, combines its own plants with those of others in the U·S·S family to supply the West with everything in steel. Steel structural members... steel floors, rods, plates, pipe... steel roofing and siding... all are adding their strength to make a greater West tomorrow.

For information on products of the great mills of United States Steel, get in touch with your Columbia Steel Company office. The services of our field engineers are available.

**Only STEEL can give you all 7 of these structural advantages:** Extra toughness and shock resistance • Incombustibility • High strength-weight ratio • Highest modulus of elasticity Versatility of application • Great durability • Ultimate economy

## Columbia Steel Company

USS

San Francisco Los Angeles Portland Seattle Salt Lake City

UNITED STATES STEEL

*(Continued from page 23)*

The new shop is housed in a new 80x 415-foot building, with a complete machine shop adjacent for production and servicing of dies and parts. Offices are also in a separate structure. The plant is being operated as the bolt and nut division of Bethlehem Pacific's Seattle Steel plant. It is expected to manufacture about one-third of Bethlehem Pacific's annual bolt and nut capacity.

### Spreckels Installs New Cooling Towers

As an important part of their water conservation program, the Spreckels Sugar Company has recently put into operation two new water cooling towers at their refinery at Spreckels, California. The towers are of the induced-draft type, and company engineers state that they will reduce by one-third the amount of water required.

The cooling towers are of redwood construction and were built at a cost of $89,000. One unit is 40 feet high, and the smaller is 29 feet high.

### Metal Congress

The Sixth Western Metal Congress and Western Metal Exposition will be held in Los Angeles at the Shrine Auditorium, April 11 through April 15, 1949. This affair will again be under the management of the American Society for Metals, with other technical organizations cooperating.

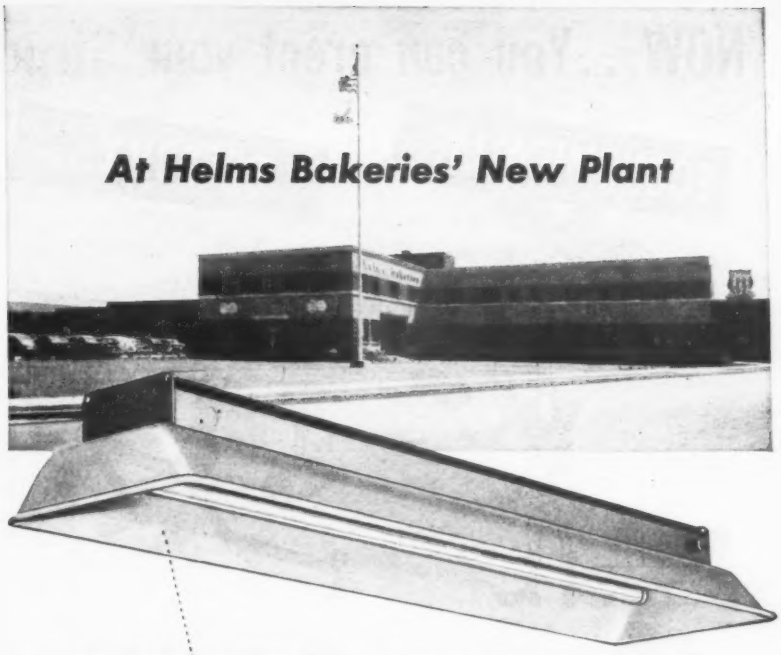
### Use of Conveyor Belts In Copper Mine Studied

Considerable thought has been given to the use of long, inclined conveyor belts, in series, to raise ore to the surface, instead of the conventional vertical hoisting, according to Wesley P. Goss, general manager of the Magma Copper Co., Superior, Arizona. In a discussion before the American Mining Congress at San Francisco, Mr. Goss declared that the use of conveyor belts in series is quite practical from an engineering point of view.

"Modern conveyor belt systems afford a cheap method of transportation," Mr. Goss said, "and the inclined conveyor could be pointed in the direction of the surface plant, thus greatly reducing length of surface transportation." Present conclusions, according to Mr. Goss, are that conveyor belt life would be too short for economical operation, although he admitted that great strides are being made by belt manufacturers for this type of service.

### Foundry Meetings

Pacific Coast chapters of the American Foundrymen's Association will hear a talk on cupola operations and control at their November meetings by Wally Levi, chief metallurgist, Lynchfield Foundry Co. In October they were addressed by Clyde A. Sanders, American Colloid Co., Chicago, speaking on foundry sand practices.

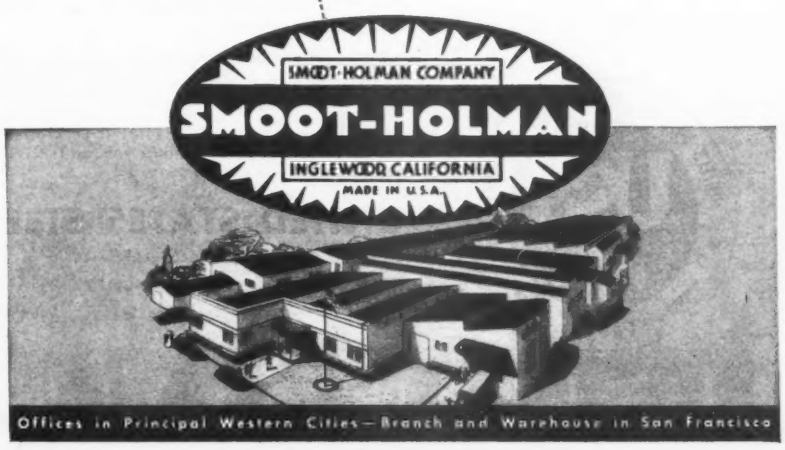




BETTER LIGHTING

CONTRIBUTES TO A BETTER PRODUCT

Seventeen years of experience qualifies Helms Bakeries to say what makes good bread . . . and efficient bakeries. Day and night shifts over a period of nearly two decades have proven to this outstanding company, the importance of more efficiently, more comfortably lighted interiors to a better product.

The installation of Certified Smoot-Holman industrial fluorescent lighting equipment in Helms' new plant in Montebello, California, is Helms' answer to this need. Smoot-Holman industrial lighting fixtures are a positive guarantee of maximum performance with minimum maintenance cost.



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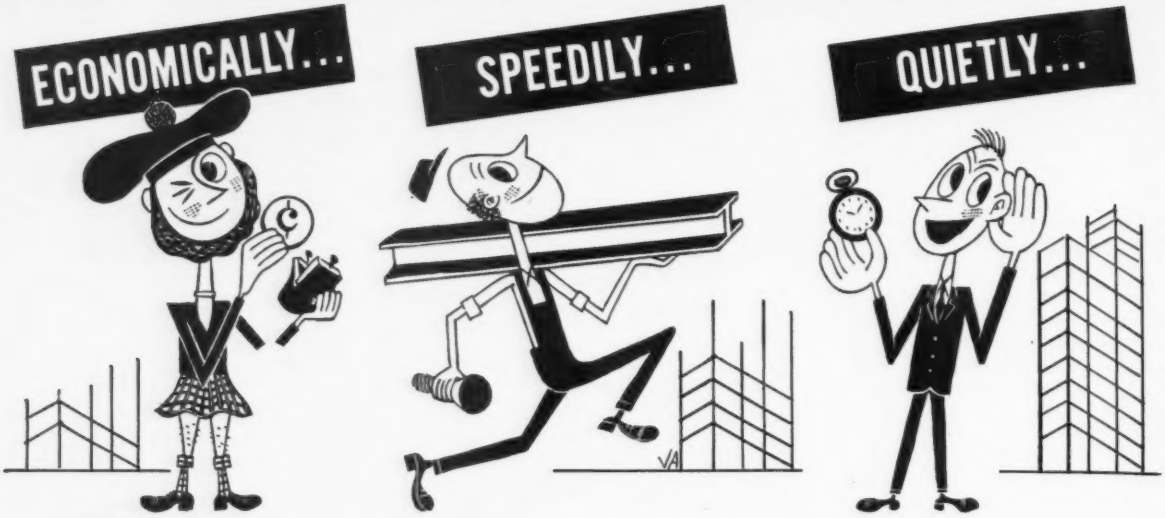


## ...with Dardelet "Rivet Bolts"

Erect your structural steel with just a man, a maul and a wrench—and Dardelet "Rivet Bolts." You'll save time and money.

IN all kinds of construction—from the smallest job to the largest structure—the wide use of DARDELET Self-Locking "RIVET BOLTS" has proved their superiority. They are unsurpassed for holding steel members and parts together, no matter how severe the service. They are stronger, faster to handle than rivets—in construction as well as in the repair of all kinds of machinery. Can also be furnished in hot dip galvanized or electro plated. And they're approved by Federal, State and Municipal codes.

Here are some advantages of DARDELET "RIVET BOLT" construction:

**LOWER COSTS.** No expensive heating or driving equipment is needed.

**NOISE REDUCTION** . . . so often an important consideration in repair or remodeling jobs in occupied buildings.

**SPEED.** Fewer men can drive more Rivet Bolts per day. Bolts drive in . . . nuts spin on freely until they contact the work.

**MATERIAL SAVING.** Rivet Bolts may be removed and structural members used again. Disassembly is easy . . . fast.

**SHEAR AND BEARING VALUES** . . . equal to power-driven rivets or turned bolts in reamed holes.

Fill in and mail the coupon—now—and a sample Dardelet "Rivet Bolt" will be sent you absolutely free—along with complete information about this superior method of joining steel parts.

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BOSTON (Allston 34) MILWAUKEE (1) ST. LOUIS (3)

UNITED STATES STEEL

# THE WESTERN OUTLOOK..*News...Statistics...* 1

***New Fontana blast furnace only bright spot in gloomy steel outlook, as Geneva drops to one-third output; Oil refineries chalk up all-time production record; Manufacturing employment at highest levels since war; Ample water supply lessens chance of power shortage; Peach pack estimate down a million cases; Government to study sardine puzzle.***

IN SPITE of ruinous strikes in the shipping and petroleum industries, employment in non-agricultural industries has shown some remarkable gains in recent weeks. In California and in Washington, manufacturing employment reached the highest levels since the war. In Montana it was highest in state history. Canning, aircraft and shipbuilding were excluded from the figures used for this. The sharp seasonal fluctuations in canning, and the tremendous wartime rise and postwar decrease in aircraft and shipbuilding, the long term trend in basic manufacturing industries in California is not readily evident from the statistics of employment in manufacturing as a whole. According to Paul Scharrenberg, director of the California Department of Industrial Relations, the trend in manufacturing employment in non-war industries has been steadily upward for the past 10 years. In August, 1938, approximately 216,000 wage earners were employed in California manufacturing plants outside of canning, shipbuilding and aircraft. Employment in this group of non-war industries climbed steadily and registered a high of 371,000 in November, 1943. From that level employment declined slowly until V-J Day when sharp decreases occurred. A postwar employment low in non-war manufacturing (excluding canning) of 289,000 workers was reached in February, 1946, from which point there has been an almost uninterrupted rise to an all-time high of 398,000 in August, 1948. However, an increasing number of wage earners have been laid off recently due to labor disputes — the huge Crockett refinery of California and Hawaiian Sugar was shut down because of lack of raw sugar, throwing hundreds out of work.

Washington's non-agricultural employment reached a peak of 692,750, highest registered since the war. Estimates released jointly by John D. Davis, Commissioner of the Employment Security Department, and Max D. Kossoris, Regional Director of the U. S. Bureau of Labor Statistics, show that the transportation equipment group had the greatest increase, with a net gain of 2,150, or 13.8 per cent. Settlement of the aircraft strike, however, boosted this figure shortly after their report was issued.

Oregon manufacturing employment showed a sizeable increase, according to the preliminary estimate of the State Unemployment Compensation Commission, with a total of 154,300 for August, compared with 146,200 in July. Chief factors in Montana's all-time high were employment in construction and mining.

*(Continued on page 29)*

### CONSUMERS' PRICE INDEX

*From Bureau of Labor Statistics*
*100=5 yr. avg. 1935-39*

| | Los Angeles | San Francisco | Portland | Seattle | Denver |
|---|---|---|---|---|---|
| Jan. 15 | 167.6 | .... | 174.4 | .... | 167.0 |
| Feb. 15 | 168.1 | .... | . .. | 170.7 | .... |
| March 15 | 167.4 | 171.4 | .... | .... | .... |
| April 15 | 169.3 | .... | 175.8 | .... | 168.5 |
| May 15 | 169.1 | .... | .... | 174.3 | .... |
| June 15 | 168.8 | 174.2 | .... | .... | .... |
| July 15 | 170.3 | . .. | 180.3 | .... | 172.5 |
| Aug. 15 | 171.0 | .... | .... | 176.2 | .... |

### MANUFACTURING EMPLOYMENT

*Estimated Number of Employees in Non-Agricultural Establishments—Source: U. S. Bureau of Labor Statistics*

| | MONTANA | | IDAHO | | WYOMING | | COLORADO | | NEW MEXICO | | ARIZONA | | UTAH | | NEVADA | | TOTAL MTN. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| March | 16,300 | 17,200 | ..... | ..... | ..... | .... | ..... | ..... | 9,000 | 8,300 | 14,100 | 15,100 | 23,050 | 23,700 | 3,200 | 3,300 | ..... | ..... |
| April | 16,600 | 17,100 | ..... | ..... | ..... | ..... | ..... | ..... | .... | . .. | 14,500 | 15,900 | 23,510 | 22,300 | 3,700 | 3,300 | ..... | ..... |
| May | 17,100 | 17,000 | ..... | ..... | ..... | ..... | ..... | ..... | 9,100 | 9,300 | 14,200 | 16,200 | 24,110 | 24,400 | 3,300 | 3,300 | ..... | ..... |
| June | 17,800 | 17,700 | ..... | ..... | ..... | ..... | ..... | ..... | 9,100 | 10,000 | 14,800 | 16,500 | 25,020 | 26,300 | 3,300 | 3,400 | ..... | ..... |
| July | . ... | 18,200 | ..... | ..... | ..... | ..... | ..... | ..... | 9,300 | 10,400 | 14,000 | 15,700 | 29,810 | 29,400 | 3,400 | 3,400 | ..... | ..... |
| August | ..... | ..... | ..... | ..... | ..... | .... | ..... | ..... | 9,300 | 10,500 | 13,400 | 15,700 | 29,620 | 28,100 | 3,400 | 3,400 | ..... | ..... |

| | WASHINGTON | | OREGON | | CALIFORNIA | | TOTAL PACIFIC | |
|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| March | 169,200 | 173,700 | 122,000 | 121,100 | 692,400 | 700,200 | 983,600 | 1,043,000 |
| April | 170,400 | 175,300 | ..... | 126,800 | 698,600 | 695,800 | ..... | 997,900 |
| May | 174,900 | 152,350 | 117,100 | 130,300 | 693,000 | 696,300 | 985,000 | 978,950 |
| June | 179,300 | 163,400 | ..... | ..... | 689,300 | 712,900 | ..... | ..... |
| July | 176,500 | 179,900 | ..... | 146,200 | 741,300 | 704,000 | ..... | 1,030,100 |
| August | 185,000 | 183,150 | ..... | 154,300 | 760,200 | 770,900 | ..... | 1,108,350 |

### INSURED UNEMPLOYMENT

*(Under all programs: figures in thousands. From Social Security Board)*

| Week ending | Ariz. | Colo. | Idaho | Ment. | Nev. | N. Mex. | Utah | Wyo. | Total Mtn. | Calif. | Ore. | Wash. | Total Pacific |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| March 6 | 7.1 | 10.3 | 8.1 | 7.9 | 2.5 | 6.0 | 7.5 | 2.0 | 51.4 | 228.9 | 24.0 | 47.1 | 300.0 |
| April 3 | 6.6 | 7.8 | 6.2 | 6.4 | 2.2 | 5.4 | 5.9 | 1.5 | 42.0 | 233.3 | 20.5 | 37.6 | 291.4 |
| May 1 | 5.5 | 6.2 | 3.7 | 4.0 | 1.9 | 3.5 | 4.3 | .8 | 29.9 | 220.6 | 16.5 | 31.5 | 268.6 |
| June 5 | 4.4 | 4.2 | 1.5 | 2.0 | 1.4 | 2.4 | 2.3 | .4 | 18.6 | 193.7 | 11.7 | 25.7 | 231.1 |
| July 3 | 4.2 | 4.0 | .8 | 1.2 | 1.3 | 2.3 | 2.2 | .3 | 16.3 | 172.4 | 9.7 | 17.7 | 199.8 |
| July 31 | 4.5 | 4.1 | 1.0 | 1.0 | 1.2 | 2.3 | 2.5 | .4 | 17.0 | 173.6 | 9.4 | 19.5 | 202.5 |

### INDEX NUMBERS OF WHOLESALE PRICES BY GROUPS OF COMMODITIES AND BY MONTHS

*Bureau of Labor Statistics, Washington 25, D.C.*
*(1926 = 100)*

| Year and Month | Farm Products | Foods | Hides and Leather Products | Textile Products | Fuel and Lighting | Metals and Metal Products | Building Materials | Chemicals and Allied Products | House Furnishing Goods | Miscellaneous | ALL COMMODITIES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1948 Yr. Avg. | 186.0 | 173.8 | 185.4 | 149.8 | 130.9 | 155.9 | 193.1 | 136.1 | 142.0 | 120.8 | 161.4 |
| March | 186.7 | 176.7 | 186.1 | 150.3 | 131.6 | 157.2 | 195.0 | 136.2 | 142.3 | 121.8 | 162.8 |
| April | 189.1 | 177.4 | 187.5 | 150.2 | 132.6 | 157.1 | 196.4 | 134.7 | 142.6 | 121.5 | 163.9 |
| May | 196.0 | 181.4 | 186.8 | 149.6 | 133.1 | 158.7 | 196.8 | 135.7 | 143.4 | 121.4 | 166.2 |
| June | 194.9 | 188.3 | 189.2 | 148.9 | 135.7 | 162.8 | 199.4 | 134.4 | 144.5 | 120.3 | 168.6 |
| July | 191.1 | 189.5 | 188.4 | 148.5 | 136.6 | 170.8 | 202.8 | 132.0 | 145.4 | 119.6 | 169.4 |

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_____

_____

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*(Continued from page 27)*

Utah's Department of Employment Security reported that there was no divergence from usual seasonal patterns of employment during August. Although manufacturing showed a slight loss it was expected to pick up during October, November and December. Construction employment increased appreciably, and mining showed a slight gain that was lost again with the opening of the fall university year.

## Commerce and Banking

Dollar sales of 304 Pacific Coast merchant wholesalers were 9 per cent above same month of 1947 but there was no change from the June, 1948, level. Security First National Bank's index of business activity in Southern California rose sharply in August to a new all-time peak after several months of relatively little change. Pacific Northwest carloadings for the year through August are below 1947—769,351 cars as against 833,602 — but slightly above 1946. Export freight through Pacific Coast ports for August was 333 cars above 1947.

## Gas

Second quarter reports on natural gas from American Gas Association of 132,520 gain in residential customers on the Pacific Coast for the second quarter of 1948 over the corresponding period of 1947 may easily be interpreted as being representative of the population growth of the area. The gain in commercial customers was 6,351, but only 31 industrial customers. Volume of industrial sales in mcf was up 12.3 per cent however, commercial 41.8 per cent, and residential 39 per cent. Total revenues of the three utility companies reporting were up 31.4 per cent.

Manufactured gas sales from two utility companies on the Pacific Coast showed a gain of 16.2 in volume of gas delivered, with industrial sales up 6 per cent.

## ELECTRIC ENERGY

*(Production for Public Use—In thousands of kilowatt hours. Source: Federal Power Commission)*

| | Mountain | | Pacific Northwest | | California | | Total Pacific | |
|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| February | 962,756 | 1,168,514 | 1,328,994 | 1,539,841 | 1,301,334 | 1,514,611 | 2,630,328 | 3,054,452 |
| March | 1,041,287 | 1,200,824 | 1,454,305 | 1,628,060 | 1,531,005 | 1,572,699 | 2,985,310 | 3,200,759 |
| April | 1,185,575 | 1,402,860 | 1,456,204 | 1,722,614 | 1,662,024 | 1,503,141 | 3,118,228 | 3,225,755 |
| May | 1,254,204 | 1,432,407 | 1,450,716 | 1,661,764 | 1,738,511 | 1,632,572 | 3,189,227 | 3,294,336 |
| June | 1,263,666 | 1,432,925 | 1,363,534 | 1,458,586 | 1,759,504 | 1,747,255 | 3,123,038 | 3,205,841 |
| July | 1,342,747 | 1,558,236 | 1,382,030 | 1,663,475 | 1,911,232 | 476,850 | 3,293,262 | 3,610,389 |

## NATURAL GAS

(CALIFORNIA)

*(Compiled by Roy M. Bauer, gas supply supervisor, Southern California Gas Company)*

| | —Number of Consumers— | | *Utilization (In thousands of cubic feet) | | | |
|---|---|---|---|---|---|---|
| 1947 Avg. | Domestic and Commercial | Industrial | Domestic and Commerc'l Sales | Industrial Sales | Electric Generation | Net Receipts from Producers |
| Apr.-June | 2,264,203 | 5,615 | 12,978,115 | 10,812,647 | 2,609,401 | 27,819,226 |
| July-Aug.-Sept. | 2,286,105 | 5,416 | 9,011,093 | 13,555,587 | 4,472,142 | 30,407,522 |
| Oct.-Nov.-Dec. | 2,341,438 | 5,421 | 17,765,709 | 11,991,903 | 4,393,060 | 38,665,845 |
| 1948 | | | | | | |
| January | 2,380,640 | 5,423 | 28,285,107 | 8,573,499 | 5,017,424 | 43,791,288 |
| February | 2,394,316 | 5,431 | 28,567,848 | 7,220,292 | 4,492,387 | 41,786,308 |
| March | 2,406,643 | 5,437 | 27,126,578 | 9,223,591 | 3,727,824 | 42,412,284 |

**Utilization figures do not include company use, storage, and unaccounted for.*

## FREIGHT

Cars of revenue freight, railroad carriers in 11 Western states.

*(Compiled from Assn. of Am. R.R. weekly reports)*

| | Carloadings | | Received from Eastern Connections | |
|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 |
| February | 509,715 | 463,924 | 288,172 | 271,370 |
| *March† | 656,920 | 600,715 | 350,527 | 313,850 |
| *May | 522,144 | 688,311 | 279,392 | 356,101 |
| *June | 714,982 | 718,618 | 348,892 | 358,714 |
| July | 755,983 | 560,656 | 331,613 | 271,766 |
| August | 728,578 | 622,139 | 381,068 | 332,008 |

*5-week period. †Incl. 4 weeks of following month.

In the Mountain states, total natural gas sales of companies accounting for approximately 78 per cent of the total were up 10.1 per cent and industrial sales 3.7 per cent.

California's supply of natural gas will be exhausted in 20 years at present rate of use, according to testimony of Pacific Gas & Electric Co. engineers before the California Public Utilities Commission. They estimate the present reserve at 10,000,000,000 cubic feet, saying that a new method of computing gas reserves had shown 40 per cent less gas in the Rio Vista field alone than previous estimates indicated.

## BANK LOANS

*Industrial, commercial and agricultural*
*(In millions of dollars)*

From weekly reporting member banks of Fed. Res. System in 7 western cities: L.A., S.F., Portland, Seattle, Tacoma, Spokane, and Salt Lake.

(Average of Wednesday reports)

| 1948 | |
|---|---|
| March | 2,000 |
| April | 1,992 |
| May | 1,983 |
| June | 2,033 |
| July | 2,045 |
| August* | 2,108 |

*Includes 3 days of preceding month.

## BANK DEPOSITS

*(In millions of dollars—adjusted)*

Daily average month, all member banks in 12th Federal Res. Dist. Demand deposits excluding U. S. Gov't deposits, cash items in process of collection, and interbank deposits.

| 1948 | Net Demand Deposits | Time Deposits |
|---|---|---|
| March | 8,685 | 6,065 |
| April | 8,676 | 6,036 |
| May | 8,720 | 6,012 |
| June | 8,777 | 6,019 |
| July | 8,735 | 6,026 |
| August | 8,834 | 6,009 |

## WHOLESALERS' SALES

*In thousands of dollars. Percentage changes are from corresponding month of preceding year. From Bureau of the Census.*

**MOUNTAIN**

| | Automotive Supplies | Change | Electrical Goods | Change | Furn. and house furn. | Change | Groc. and foods exc. farm prod. | Change | General Hardware | Change |
|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | 676 | — 1 | 2,808 | + 28 | ... | .... | 1,568 | .... | .... | .... |
| March | 631 | — 6 | 3,390 | + 34 | 395 | +20 | 2,055 | .... | .... | .... |
| April | 789 | 0 | 3,657 | + 29 | ... | ... | .... | .... | 2,511 | +26 |
| May | 284 | + 1 | 3,412 | + 12 | ... | .... | .... | .... | 2,313 | + 8 |
| June | 685 | +17 | 3,832 | + 25 | 336 | +28 | .... | .... | 2,356 | +19 |
| July | 811 | + 7 | 3,731 | + 22 | ... | ... | ... | .... | 2,565 | +26 |

**PACIFIC**

| | | | | | | | | | | | Industrial Supplies | Change | Lumber & bldg. mat. | Change | Mch. equip. and supplies excl. elec. | Change | Metals | Change |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Feb. | 2,401 | —19 | 11,542 | + 22 | 341 | + 20 | 3,289 | .... | 7,277 | — 2 | ... | .... | 1,712 | +48 | 774 | —22 | 751 | +17 |
| March | 2,601 | —16 | 13,550 | + 41 | 285 | + 42 | 2,889 | .... | 8,626 | +10 | 595 | + 7 | 1,685 | +28 | 857 | —17 | ... | .... |
| April | 1,949 | —15 | 12,546 | + 21 | 281 | + 55 | 5,215 | .... | 7,414 | + 4 | 428 | —16 | 1,906 | +25 | ... | .... | ... | .... |
| May | 2,687 | — 4 | 12,587 | + 15 | 281 | + 6 | 6,984 | .... | 8,096 | + 3 | 536 | + 6 | 1,616 | +42 | 597 | —17 | ... | .... |
| June | 2,756 | + 2 | 12,557 | + 11 | 239 | + 26 | 5,129 | .... | 8,040 | + 8 | 419 | + 7 | 1,578 | +53 | 604 | + 6 | ... | .... |
| July | 2,686 | — 5 | 12,965 | + 14 | 1,435 | + 18 | 8,395 | .... | 7,016 | + 8 | 522 | + 2 | 1,015 | +37 | 902 | + 8 | ... | .... |

*Full-line wholesalers.

## Electric Energy

Demand throughout the West continues considerably above last year, the July total for the West being 8,300,000 kw., compared with 7,400,000 kw. last year same month. Southern Oregon and the northern tier of California counties show the greatest increase, due to the southward movement of the lumber industry. Utah

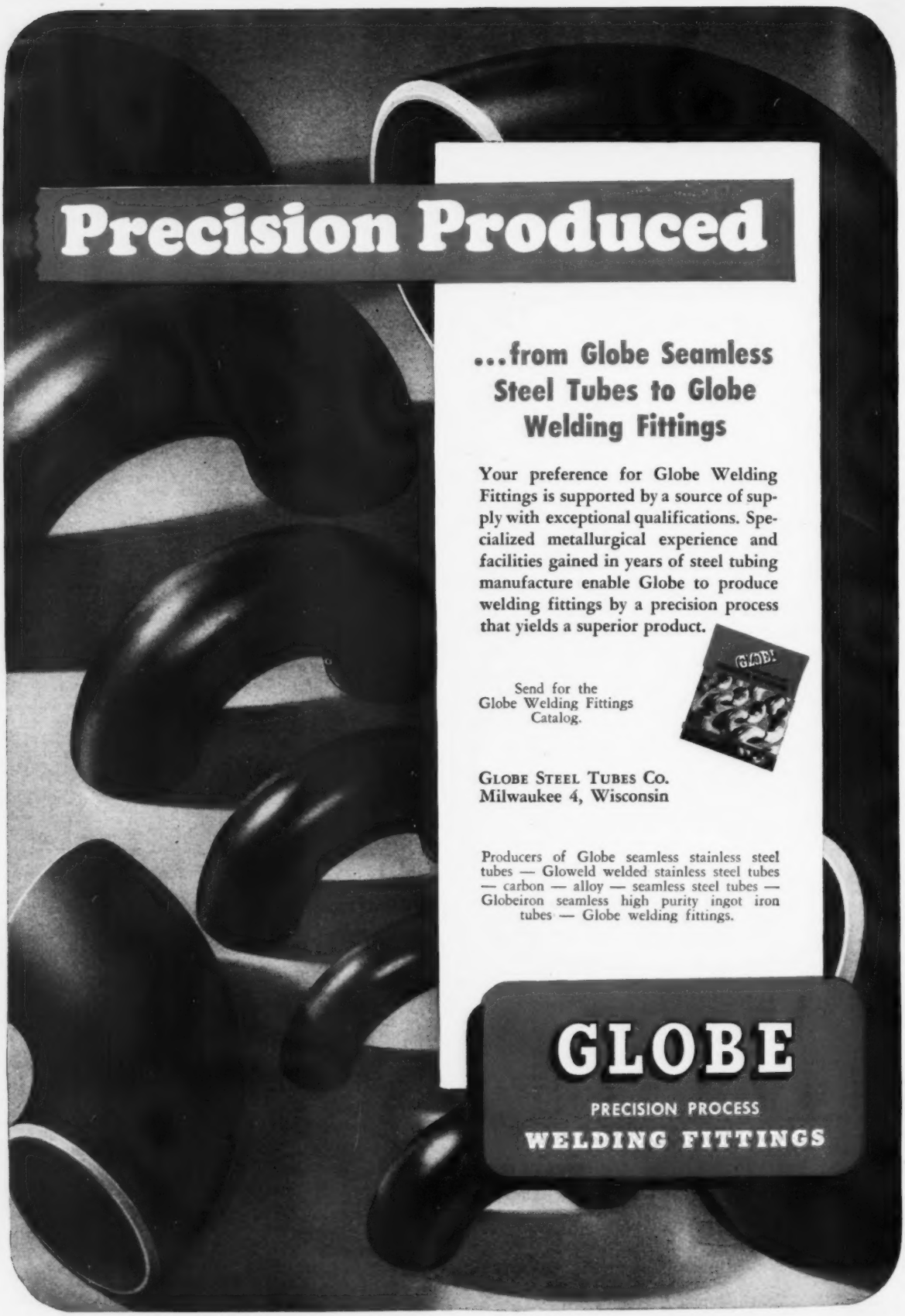
*(Continued on page 31)*

## INDEX OF DEPARTMENT STORE SALES

*Index numbers, 1935-39 daily average=100 with seasonal adjustment. Compiled by Federal Reserve Bank.*

| | Total 12th Fed. Res. Dist. | | Southern California | | Northern California | | Portland | | Western Washington | | Eastern Washington and northern Idaho | | Utah and southern Idaho | | Phoenix | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| February | 311 | 319 | 341 | 365 | 267 | 282 | 308 | 301 | 329 | 313 | 312 | 291 | 343 | 321 | 419 | 441 |
| March | 319 | 331 | 339 | 374 | 281 | 283 | 300 | 318 | 336 | 336 | 329 | 341 | 366 | 331 | 432 | 448 |
| April | 320 | 353 | 350 | 400 | 282 | 303 | 292 | 335 | 334 | 349 | 324 | 348 | 355 | 386 | 421 | 482 |
| May | 329* | 356 | 363* | 404 | 292 | 313 | 315 | 339 | 338 | 343 | 329 | 338 | 340 | 365 | 421 | 484 |
| June | 334 | 372 | 365 | 422 | 295 | 328 | 328 | 350 | 340 | 363 | 337 | 390 | 343 | 357 | 420* | 459 |
| July | 331 | 365 | 363 | 411 | 291 | 318 | 329 | 382 | 341 | 344 | 313 | 382 | 350 | 334 | 404 | 464 |

*Revised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(Continued from page 29)

also has made a good showing, 330,000 kw. against 300,000 kw., but central California had the least increase of any area; in fact until June it was below last year, but the July load rose sharply above 1947.

Pacific Gas & Electric Co. in northern California has been having a strike that will delay its steam plant scheduled for completion in December. Mountain reservoirs are well filled, above the scheduled draw-downs, and reports have been heard that some water may have to be spilled from Boulder Dam. Arizona is over the hump until next summer, when two new 11,500 kw. steam plants, one for Central Arizona Light & Power Co. at Phoenix, and the other for Tucson Gas & Electric.

## Steel

In the tightening supply situation, the news of a new blast furnace to be built at Fontana is a bright light on the horizon, because its production of 1,200 tons of pig iron is as good as adding that much scrap. The only trouble is that it will be a year before the furnace is completed. Meanwhile the ship wrecking program on the Pacific Coast is nearing an end, which will leave the Coast in a bad way for scrap for many months next spring unless new sources of supply appear meanwhile.

The careful survey of government establishments on the Coast made some months ago which indicated considerable potential supply of scrap apparently was love's labor lost, because the government is now retaining its hold on everything in these establishments in view of the disturbed international situation.

One voluntary allocation program after another submitted to the government by various industries, in order to be sure of a supply, cuts deeper into the supply of steel available for ordinary uses, and already has passed 10 per cent of the total. The warm air furnace industry is the only Western group to have set up such an allocation so far.

Commitments for foreign pipe lines, which have cut deeply into domestic supply, were made at a time when U. S. Steel Corporation was faced with marketing 500,000 to 600,000 tons of plates annually from the newly purchased Geneva plant in a market where the corporation had never before in peacetime been able to sell more than one-fifth of that amount. This was the report of F. B. DeLong, vice-president of sales, Columbia Steel Company, at the recent Pacific Coast Gas Association convention. At that time, he said, no one was able to forecast the domestic demand which ultimately developed.

Corroborating him, the American Iron & Steel Institute reports that in the first six months of 1948 the oil and gas industries received nearly two-thirds as much steel as in the entire year of 1947.

Meanwhile, Geneva's production of pig iron has been cut one-third for a period of four to six weeks as the result of a break-out, while steel output will be only one-third of normal because of a critical shortage of scrap.

## Oil

Engineering improvements, coupled with minor additions and rearrangements of the nation's oil refineries, have permitted the industry to handle a record-breaking volume of petroleum during the past year. Relatively little new construction took place, yet refining capacity rose from 5,500,000 to better than 6,000,000 barrels a day.

Demand for oil products is expected to increase seven per cent this winter, but unless the winter proves very cold, enough oil will be forthcoming to provide heat for homes and gasoline for cars, the Interstate Oil Compact Commission's economics advisory committee predicts.

To broaden the nation's sources of supply, the government has (1) entered into an industry-Bureau of Mines agreement for testing commercial samples of oil shale and shale oil from the government's pilot plant at Rifle, Colorado, and awarded a $43,000 contract for exploratory drilling on the U. S. Naval oil-shale reserve in western Colorado; (2) moved to equalize supplies of crude by giving small refiners whose crude oil needs are greatest the first chance at government royalty oil; and (3) begun expanding its study of secondary recovery of oil; with a $300,000 research program which gives the Bureau of Mines nearly $1,000,000 in 1949 for such work. Attention will be concentrated on the stripper well fields—those where production is on the down-grade so that income from the wells fluctuates between profit and loss. Nearly three-fourths of the nation's 425,000 producing wells fall into the "stripper" class.

## Aluminum

Pacific Northwest plants have been squeaking by from month to month on power supply, as the result of several unexpected 30-day extensions granted by the Bonneville Power Administration, and at the time of going to press the industry was cogitating whether the October 15 cut-off date would be the final extension or not.

Meanwhile all eyes are on Alcoa's experiment in Texas with natural gas from which to develop electricity; if successful, this might free the aluminum industry to a considerable extent from hydro power, or at least put the two sources of energy on a competitive basis. Because of extreme demand for aluminum—sheets being on an allocation basis and wire and cable on two-year delivery—there has not been enough supply to permit further development of foil and extrusion applications.

## Non-Ferrous Metals

The current trend in the non-ferrous metals industry is upward. An insatiable market plus favorable prices are keeping operating companies up to capacity and encouraging new development. Because of the price increases, however, much of the increase will represent higher values rather than greater volume of production.

## Coal

Intermountain bituminous coal production is on the rise after a brief and mild seasonal slump. The outlook is for near-capacity operations throughout the fall and winter.

## Canning and Packing

Revised estimates of the California cling peach pack bring the total down to between 14,500,000 and 15,500,000 cases, instead of the earlier expectations of 15,000,000 to 16,000,000 cases. Drop due to lower case yield per ton of raw material. Fruit cocktail estimated at about same as last year. Increase in productive capacity of canneries indicated by a number of canners running out of raw material in mid-afternoon at peak of the pack.

Tomato acreage in California about 20 per cent under last season, and packing season got off to very late start. Final audited pack figures

(Continued on page 33)

### IRON AND STEEL

Western Area of the United States

*From American Iron and Steel Institute (in net tons)*

| | Pigiron Output | Percent of Capacity | Steel Output | Percent of Capacity |
|---|---|---|---|---|
| March | 186,966 | 84.5 | 395,781 | 92.1 |
| April | 133,030 | 62.1 | 310,108 | 74.5 |
| May | 187,501 | 84.5 | 398,905 | 92.9 |
| June | 202,796 | 94.6 | 397,414 | 95.5 |
| July | 196,608 | 89.0 | 410,244 | 95.7 |
| August | 163,319 | 73.8 | 374,342 | 87.1 |

### Alloy Steel

| | Output | Carbon Ingots, Hot Topped* |
|---|---|---|
| March | 7,286 | 5,447 |
| April | 4,806 | 4,255 |
| May | 7,173 | 9,341 |
| June | 6,948 | 3,672 |
| July | 5,445 | 6,638 |
| August | 4,848 | 6,383 |

*Included in total steel.

### BITUMINOUS COAL AND LIGNITE

*(In thousands of tons. From Bureau of Mines)*

| | (Colo.-N. Mexico) | | (Wyoming | | (Utah) | | (Montana) | | (Wash.-Alaska) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| February | 810 | 770 | 738 | 634 | 770 | 660 | 298 | 262 | 131 | 144 |
| March | 768 | 419 | 717 | 341 | 753 | 321 | 286 | 281 | 143 | 129 |
| April | 431 | 370 | 482 | 378 | 514 | 245 | 196 | 200 | 108 | 104 |
| May | 485 | 563 | 557 | 519 | 653 | 701 | 242 | 215 | 97 | 140 |
| June | 520 | 505 | 596 | 477 | 581 | 560 | 150 | 198 | 107 | 137 |
| July | 298 | 391 | 345 | 346 | 408 | 502 | 182 | 228 | 71 | 95 |

### PETROLEUM

(California, Oregon, Washington, Arizona, Nevada)

*(From Bureau of Mines)*

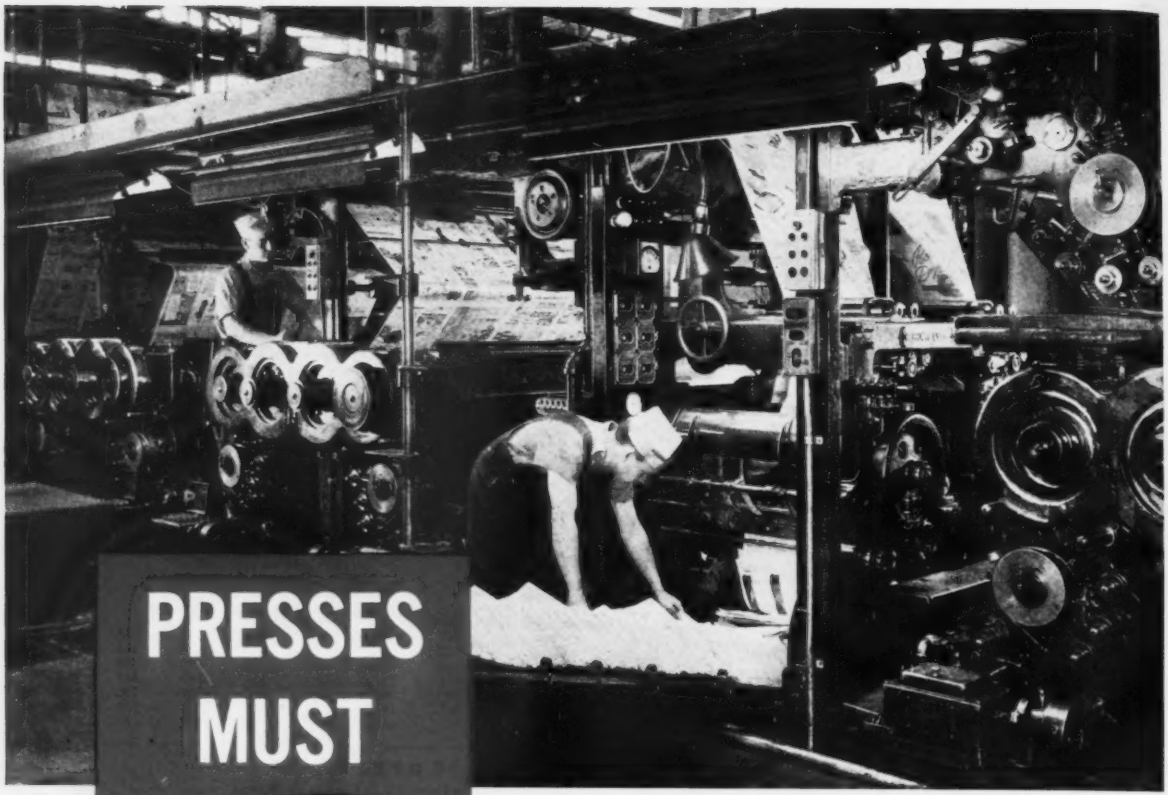
| | CRUDE PRODUCTION (Barrels, daily avg.) | TOTAL DELIVERIES (Thousands of barrels daily) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | GASOLINE | | GAS OIL & DIESEL | | HEAVY FUEL OIL | | ALL PRODUCTS | |
| | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| February | 933,622 | 320 | 313 | 142 | 204 | 425 | 394 | 1,012 | 1,053 |
| March | 29,138 | 304 | 334 | 117 | 170 | 390 | 390 | 932 | 1,036 |
| April | 28,300 | 336 | 357 | 125 | 159 | 385 | 357 | 988 | 1,000 |
| May | 29,335 | 332 | 384 | 85 | 123 | 357 | 328 | 912 | 970 |
| June | 28,466 | 385 | 401 | 90 | 117 | 362 | 330 | 978 | 995 |
| July | 29,350 | 335 | 380 | 88 | 94 | 360 | 321 | 935 | 951 |

### COPPER

*(Short tons. From U. S. Bureau of Mines)*

| | ARIZONA | | UTAH | | MONTANA | | NEW MEXICO | | NEVADA | | TOTAL WEST'N STATES | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| February | 29,450 | 29,300 | 21,800 | 21,980 | 5,050 | 4,900 | 4,732 | 5,652 | 4,000 | 3,000 | 65,383 | 65,547 |
| March | 32,000 | 31,325 | 24,250 | 23,075 | 5,500 | 5,640 | 4,840 | 5,896 | 4,100 | 3,100 | 71,112 | 69,857 |
| April* | 30,200 | 31,625 | 23,500 | 23,400 | 5,200 | 5,370 | 5,471 | 6,094 | 4,050 | 3,285 | 68,853 | 70,655 |
| May* | 31,000 | 30,815 | 25,000 | 24,120 | 4,800 | 5,270 | 5,368 | 6,149 | 4,600 | 3,520 | 71,180 | 70,585 |
| June | 30,000 | 31,750 | 26,000 | 23,406 | 4,760 | 4,900 | 5,400 | 6,927 | 3,000 | 3,410 | 69,160 | 70,379 |
| July | 32,000 | 30,090 | 23,500 | 22,800 | 4,600 | 4,490 | 5,400 | 5,918 | 4,040 | 3,150 | 70,012 | 67,238 |

*Corrected.



# PRESSES MUST ROLL

Publication printers must deliver on time... it's out of the question to have presses down when the paper is due, or to take a chance on time-consuming breakdowns during the press run. That's why this tremendous newspaper press and many other modern machines at Pacific Press are lubricated with General Petroleum products.

The new Los Angeles plant of Pacific Press prints newspapers, national magazines and hundreds of commercial jobs, many on completely new types of presses built specially for this company. High speeds and pressures result in unusual lubrication problems, which are being solved through cooperative studies by Pacific Press engineers and G. P. lubrication engineers.

Substantial savings, both in the volume of lubricants used, and the number of different materials required, have already been made for Pacific Press, and the lubrication surveys and tests are carried on continuously.

The same scientific approach to lubrication problems is available to you. It is probable that you can reduce your costs and improve your production schedules through a G. P. Lubrication Survey. Just call the nearest branch or distributor and an experienced lube engineer will help you.

## GENERAL PETROLEUM CORPORATION

AN ENTERPRISING MEMBER OF THE PROGRESSIVE PETROLEUM INDUSTRY

Mobiloil
SOCONY-VACUUM

*(Continued from page 31)*

on California canned asparagus show 1,983,201 cases, of which 1,003,238 was white and 979,963 cases all green. Frozen asparagus totaled 1,754,784 pounds.

California canned apricot pack totaled 4,650,777 cases (No. 2½ basis), plus 639,354 cases on hand June 1. Between that date and Sept. 1, 968,253 cases had been moved and 2,547,257 cases sold. Sweet cherry pack was 236,259 cases, and movement from June 1 to Sept. 1 was 140,807 cases. California brined cherry pack for 1948 was 93,240 barrels, above the 1945 record of 85,792 barrels.

Alaska salmon pack 3,913,044 cases, a sharp drop from the 4,253,875 cases packed last year, but still above the all-time low of 3,815,378 cases in 1946.

Two steps to increase fish canning are the announcement by the government that the waters of the United States trust territory of the Pacific islands will be thrown open for commercial fishing by all countries, subject to license and government control, and the project of the California Fish and Game Commission to send out six vessels next year for laboratory work in the areas where sardines used to spawn but have failed to appear in commercial quantities since 1939. The only successful catches last year were made off the southern California and Oregon coasts.

## Sugar

Beet sugar output is trending downward as a result of crop conditions that have brought the national estimated yield (as of Sept. 1) down to 13.2 tons an acre, compared to 14.2 tons last year. Colorado seems to be particularly hard hit, so that its crop will be below Idaho. The Colorado yield of 11½ tons an acre (as against 15 tons last year) means 1,300,000 tons, compared with Idaho's expected output of 1,348,000 tons. California's prospective yield is down from 18 tons an acre last year to 16 tons in 1948.

Total U. S. output will be below 10,000,000 tons of beets, which means no acreage allotments for next year, as had been previously expected. Despite this prospect for 1949, prices have not been high enough to encourage growers, because the trade stocked up late last fall and Cuba still has a surplus of can sugar on hand, although its quota is not high enough to permit its entrance into the domestic market.

Refining of Hawaiian cane sugar on the mainland came to an abrupt stop Oct. 1 when the big C&H refinery at Crockett, California, closed down for lack of supply, due to the coast maritime strike. Considerable tonnage is still on ships in San Francisco Bay, but further shipments of Hawaiian raws will go through the Panama Canal to eastern refineries. C&H and Western Sugar Refinery have agreed on a price for the latter's cane refinery in San Francisco, but probably it will not be used this season by C&H at all.

## Apparel

Retail sales of apparel on the Pacific Coast this summer have fared considerably better than in the east, dipping only about one to nine per cent, as against a nationwide average of of 25 per cent. Western apparel makers now are beginning to rehire for the fall upswing in production.

August's sales of clothing and textiles by U. S. manufacturers picked up more than seasonally. Optimism is restrained in the trade, however, because full pipelines mean that buying will be held closely in step with actual consumer buying. The shoe industry's market has turned very spotty. Some mills are running on a 50-hour week while some of the largest manufacturers have sharply curtailed output.

An indication of how inventories have fattened came from the National Credit Office, which reports that men's clothing makers have produced more coats than retailers sold, during seven of the eight quarters since 1946. Retailers' inventories hit a postwar peak last May.

High labor and material costs are keeping prices high, but manufacturers have a wary eye on textile prices. With sheets, pillowcases, white shirts, and other once-scarce items now piling high on the shelves, fabric makers appear to face an inevitable slashing of prices. Many mills have reduced schedules. There is no way of knowing how much cloth that was hoarded by large speculators in latter wartime days has been liquidated, but it is certain that any residue will find the peak of demand far past. The garment industries are hoping that a break in raw materials may help them meet stiffening consumer resistance.

### APPAREL

*(In thousands of dollars)*

**Total Women's, Misses' & Juniors' Outerwear**

| | Los Angeles | San Francisco |
|---|---|---|
| April | 7,118 | 1,721 |
| May | 4,505 | 1,731 |
| June | 4,188 | 1,383 |
| July, August, September | 23,245 | 6,699 |
| Oct., Nov., Dec. | 24,948 | 6,844 |
| Jan., Feb., March | 30,173 | 7,897 |

| | Men's Overalls (thousands of dozens) California | Men's Wool Work & Dress Trousers (thousands of units) California |
|---|---|---|
| December | 22.0 | 103.3 |
| January | 34.4 | 90.7 |
| February | 26.8 | 85.3 |
| March | 33.0 | 109.6 |
| April | 29.0 | 92.6 |
| May | 27.7 | 86.3 |

## Meat

Trade has been slowing down and some small packing plants have shut down. Hides are slow and tallow prices way down due to large oversupply. Recent efforts by packers and renderers to persuade the government to decontrol exportation of tallow have been unsuccessful, the soapers instead wanting decontrol on soap. Yellow grease grades of tallow from the Far West found a good prewar market in Cuba, but export restrictions and higher freight rates combined have largely wiped out this market. Increase in petroleum detergent production to an estimated volume of 600,000,000 pounds this year is a big factor in depressing the tallow market.

## Lumber

Between the longshoremen's strike and car shortage, Northwest lumber production is being threatened seriously, with a large number of mills in western Oregon and along the Washington coast shutting down. Production for the year through the third quarter, however, shows up well. Third quarter production of Western pine was 14 per cent above the previous peaks of 1941, 1944 and 1946 third quarters, and production for the first three quarters of the year is 5 per cent above 1947. In the Douglas fir reginon the increase over last year is figured at 10 per cent.

### LUMBER

*(In thousands of board feet)*

*From West Coast Lumbermen's Association (Douglas Fir, Sitka Spruce, Port Orford Cedar, West Coast Hemlock, Western Red Cedar):*

| Year through August | 1946 | 1947 | 1948 |
|---|---|---|---|
| Production | 5,247,036 | 5,585,551 | 5,792,259 |

*From Western Pine Association figures (Idaho White Pine, Ponderosa, Sugar Pine and associated species):*

| Year through August | 1947 | 1948 |
|---|---|---|
| Production | 2,121,136 | 2,164,683 |

*From California Redwood Ass'n figures (includes redwoods and whitewoods):*

| Year through August | 1948 |
|---|---|
| Production | 298,800 |

## Cement

Production continues above last year, and demand still high, although some feel the peak of industrial construction has been passed. Production in California for the first six months of 1948 was 8 per cent above last year.

### CEMENT

*(In thousands of bbls.; from U. S. Bureau of Mines)*

| | —California— | | Oregon - Wash. | | Colo.-Wyom. Mont. Utah - Idaho | |
|---|---|---|---|---|---|---|
| | 1947 | 1948 | 1947 | 1948 | 1947 | 1948 |
| Jan. | 1,818 | 1,909 | 244 | 353 | 169 | 253 |
| Feb. | 1,600 | 1,880 | 325 | 354 | 184 | 193 |
| March | 1,896 | 2,049 | 517 | 545 | 313 | 314 |
| April | 1,924 | 2,105 | 561 | 619 | 409 | 531 |
| May | 1,858 | 2,003 | 561 | 621 | 493 | 492 |
| June | 1,948 | 2,087 | 522 | 609 | 492 | 450 |

### SOFT PLYWOOD

From Bureau of the Census

*(In thousands of square feet)*

| | 1947 | 1948 |
|---|---|---|
| February | 129,622 | 156,285 |
| March | 139,670 | 185,716 |
| April | 147,008 | 164,862 |
| May | 142,409 | 150,717 |
| June | 140,147 | 150,187 |
| July | 107,588 | 122,386 |

### PULPWOOD

(Pacific Northwest)

*(Cords of 128 cu. ft., roughwood basis. Source: Bureau of Census)*

| | Receipts | Consumption |
|---|---|---|
| February | 208,941 | 273,886 |
| March | 232,880 | 299,217 |
| April | 197,668 | 276,231 |
| May | 170,456 | 286,221 |
| June | 253,075 | 242,906 |
| July | 378,355 | 275,293 |

### STRUCTURAL CLAY PRODUCTS

| | UNGLAZED BRICK (in thousands of standard brick) | | UNGLAZED STRUCTURAL TILE (short tons) | | VITRIFIED CLAY SEWER PIPE (short tons) | |
|---|---|---|---|---|---|---|
| | Mountain | Pacific | Mountain | Pacific | Mountain | Pacific |
| February | 6,225 | 9,955 | 1,678 | 1,649 | 2,098 | 11,878 |
| March | 7,229 | 16,491 | 2,291 | 3,088 | 2,172 | 15,004 |
| April | 8,927 | 19,008 | 2,258 | 2,344 | 2,458 | 13,997 |
| May | 9,988 | 22,340 | 2,595 | 2,767 | 2,400 | 14,565 |
| June | 10,504 | 33,017 | 4,046 | 3,119 | 2,520 | 15,675 |
| July | 11,405 | 31,389 | 3,389 | 2,832 | 2,369 | 15,022 |

## Flour

No demand, although there was a little flurry of buying in early September. Harvest one of

*(Continued on page 35)*

### WHEAT FLOUR

*(In thousands of sacks; from Bureau of the Census)*

| | Ore.-Wash. | Montana | Utah | Colorado | California | Total |
|---|---|---|---|---|---|---|
| January | 1,480 | 275 | 264 | 486 | 363 | 2,868 |
| February | 1,250 | 275 | 254 | 360 | 269 | 2,408 |
| March | 1,288 | 296 | 309 | 501 | 293 | 2,687 |
| April | 1,496 | 293 | 290 | 471 | 339 | 2,889 |
| May | 1,535 | 280 | 237 | 454 | 285 | 2,791 |
| June | 1,427 | 295 | 317 | 481 | 366 | 2,886 |

# SAW-TOOTH TRUCK DOCKS go underground

ARCHITECT Albert B. Gardner has solved a big problem in the design of the Crenshaw Center in Southwest Los Angeles.

The buildings of the Center are located around the edge of a thirty-five acre plot in the middle of which are parking spaces for 7500 shoppers' automobiles. Gardner knew that truck deliveries would be retarded by mixing them with parking cars and shoppers on the surface. So, to solve the problem, a 2000-foot long tunnel—strictly for truck traffic—with 2-lane passage and clearance of 14 feet 6 inches now links below-ground saw-tooth docks of the stores with the city streets.

Both the diagram and photos show how Trailers can be backed into truck berths and still clear the edge of the 2-lane tunnel passage. These docks serve both incoming shipments and outgoing deliveries.

Mr. V. A. Peterson, traffic manager of Von's Supermarket, reports that the tunnel and their saw-tooth berths effects big savings—eliminating waiting time. Truck-high docks permit pallet and lift-truck handling of merchandise. Whole Trailer loads of canned goods are now unloaded in 10 minutes—all free from customer and surface congestion.

This unique design demonstrates the importance in remodeling and new building design to provide adequate docks so motor transport may serve to its peak ability. Therefore, in your planning, be sure your Architect, your Traffic Manager and a Representative of Motor Transport serve on this committee from the beginning.

*World's Largest Builders of Truck-Trailers*

**FRUEHAUF TRAILER COMPANY**

*Western Manufacturing Plant — Los Angeles*

SALES AND SERVICE—LOS ANGELES • SAN FRANCISCO • SACRAMENTO
PORTLAND • SEATTLE • FRESNO • SAN DIEGO • PHOENIX
SALT LAKE CITY • EL PASO • SPOKANE • BILLINGS • ALBUQUERQUE
DENVER

FRUEHAUF TRAILERS

**FIRST IN TRUCK-TRAILER TRANSPORT!** "ENGINEERED TRANSPORTATION"

Hear Harrison Wood, Interpreter of World Events, Every Sunday, 12:00 Noon, Pacific Time, over ABC. Consult Your Local Paper!

*(Concluded from page 33)*

the largest the Pacific Northwest has ever had, but protein value down. Mills still grinding five days a week. Some government buying, but not enough to affect the market.

### Building Materials

Availability of clay floor and wall tile in California for the first half of 1948 soared to a record high of 10,000,000 square feet, and nationwide production was 24 per cent up from last year, according to Verne W. Boget of Los Angeles, West Coast advisory committee of the Tile Council of America.

**HOUSEHOLD FURNITURE**

*Manufacturers' Shipments—11 Western States*
*From Bureau of the Census*
*(In thousands of dollars)*

| | Upholstered Furniture | Other Household Furniture | Total |
|---|---|---|---|
| 3rd quarter, 1947 | $11,047 | $15,929 | $26,976 |
| 4th quarter, 1947 | 13,336 | 21,098 | 34,434 |
| 1st quarter, 1948 | 10,633 | 20,739 | 31,372 |

### Furniture

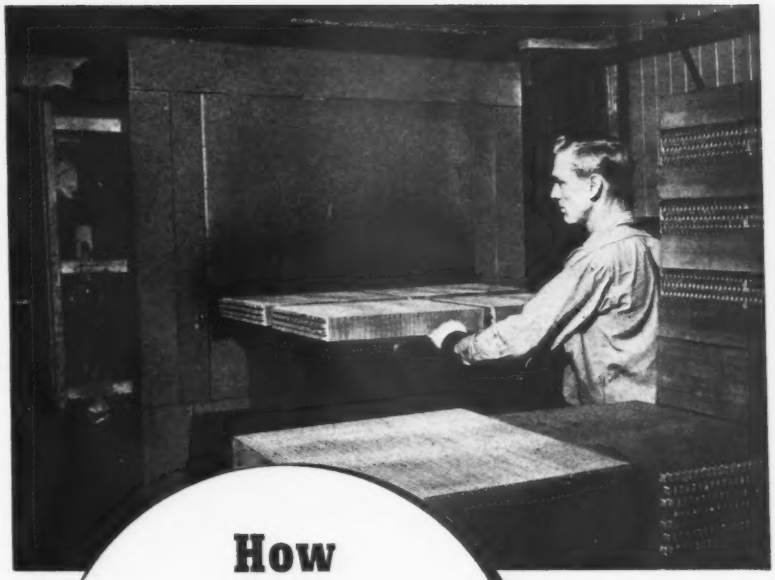
A review of the first six months' operation of the industry in southern California indicates that the amount of new orders received was down from the previous six months. Several firms have written off inventories and as a result have shown losses for the half year's operations. Although new orders have declined, the rate of shipments appeared to be maintained. Reports from manufacturers indicate that new orders are on the increase. With most of the major labor contracts now settled, a semblance of cost stabilization is reappearing.

### Rod Mills Getting Larger in Size

Consolidated Mining & Smelting Co. of Canada are installing what is believed to be the largest rod mill ever attempted in the mining industry, 11½ feet in diameter by 12 feet long. It will be driven by a 1,000 hp. motor through a hydraulic transmission and gear reducer, giving a variation of speed during trial periods or continuous operation if desired.

The trend is definitely toward the use of large rod mills in crushing and grinding circuit, according to W. L. Zeiglar, general manager, Pend Oreille Mines & Metals Co. of Metaline Falls, Wash. Speaking before the recent American Mining Congress in San Francisco, he said that it is by no means certain that there are not some inherent difficulties with the machines, and that much is yet to be learned about liners, rods, methods of operation and speeds of the mill for particular sizes and variations in characteristics of the ore to be ground.

Originally rod mills were made with relatively small diameter in length, he said, but later practice is toward large diameters and lengths about equal. Several concentrators have recently installed rod mills nine feet in diameter by 12 feet long.

With top efficiency and proven economy, more than 250 radiator cores daily are baked in this gas-fired oven at *Liberty Radiator Core Mfg. Co., San Francisco* The required temperature of 600° F. is automatically maintained.

**How GAS installations such as this help win business success**

As management knows, production must be kept *up*, costs *down*, in order to stay "in the black" and win against competition. Modern gas-fired equipment helps achieve these objectives.

Flexible gas fuel, thermostatically-controlled, holds the exact temperature that's known to be best for each job. And gas is clean, quick, dependable, as well as economical.

Consult your gas company's industrial engineers. Their helpful services are free.

*The West Prefers* GAS
*Better · Quicker · Cheaper*

THE PACIFIC COAST GAS ASSOCIATION

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(Bay Area Plant in Emeryville)
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Mail: Box 188, Emeryville, Calif.
Phone: Piedmont 5-8450, Enterprise 10176 (from S. F. Zone)

**LOS ANGELES**
4310 E. Bandini, Los Angeles
Mail: Box 3817, Los Angeles 54
Phone: Angelus 2-6141

# A Pair of Helping Hands

## for Western Industry

Two new Ryerson steel-service plants are now in full operation on the West Coast. Ryerson in Los Angeles was introduced to western industry a little more than a year ago. And now Ryerson in Emeryville is working closely with steel buyers of the San Francisco Bay Area and the Pacific Northwest.

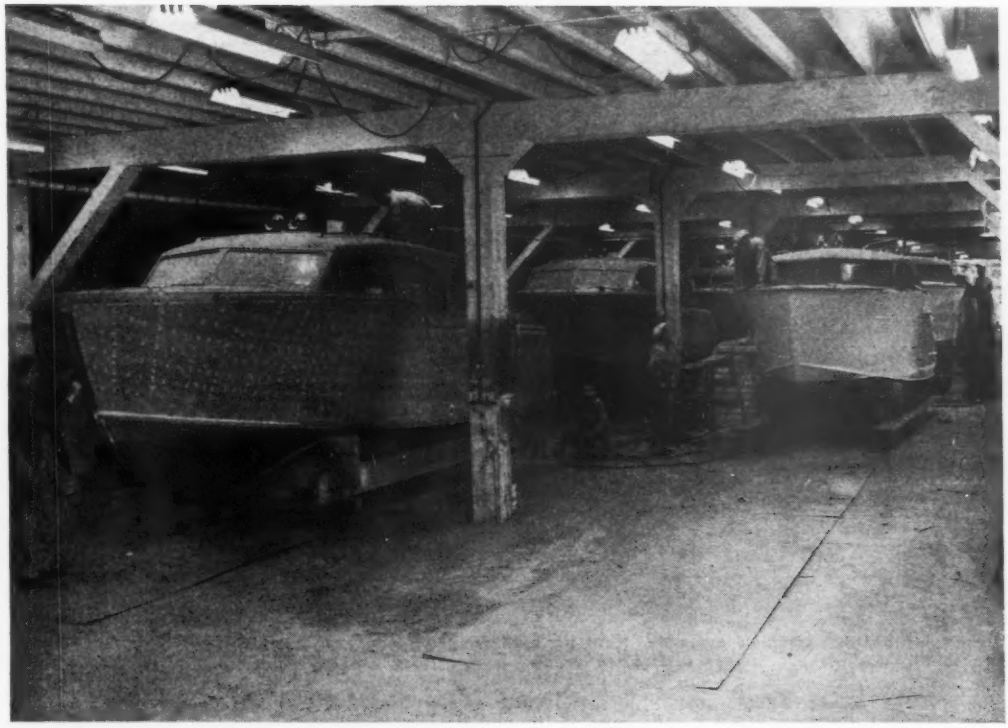
You will find stocks at both plants surprisingly large and complete. Because current demand has reduced our tonnage, your requirements may not *always* be available, but our specialists will do everything possible to supply the steel you need—or a workable alternate. We believe our diversified stocks and experienced organization make a steel-service team that merits your confidence.

So we suggest that you get in touch with our nearest plant next time you need steel from stock. Even if your order only calls for a single piece, you're always assured of the same prompt, personal service.

Joseph T. Ryerson & Son, Inc. Plants at: Los Angeles, San Francisco, Chicago, St. Louis, Milwaukee, Detroit, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

**PRINCIPAL PRODUCTS: BARS—Carbon & Alloy, hot rolled & cold finished. STRUCTURALS—Channels, angles, beams, etc. PLATES—Sheared & U. M., floor plate. SHEETS—Hot & cold rolled, coated. TUBING—Seamless & welded mechanical & boiler tubes. STAINLESS—Allegheny metal plates, sheets, tubing, etc. REINFORCING—Bars & accessories. BABBITT METAL, MACHINERY & TOOLS, etc.**

# RYERSON STEEL



**THE ASSEMBLY SHOP . . .** *At Western Boat Building Company, Tacoma, where prefabricated sections of their 26-foot Fairliner cabin cruisers are fitted together. By using more than 1,000 jigs for shaping various planks and members, craft can be built with no tools other than hammers, power screwdrivers and a minimum of final drilling.*

# Using Jigs Puts Boat Building On Mass Production Basis

WESTERN Boat Building Company at Tacoma is capturing a substantial part of the pleasure boat business in the cruiser field through production line methods that enable it to produce a superior boat at a competitive price.

The boat itself, a 26-footer in two cabin styles and called the Fairliner, is a postwar design by Dair Long of Los Angeles, who has specialized in high performance boats for military and patrol service. The production methods, original and probably more extensive than ever before used in the boat field, were evolved by Western Boat Building itself, sparked by Allen Petrich, manager of the Fairliner Division.

During the war, the company built many boats for the military services, particularly mine sweepers and patrol boats. Some tooling was used for the latter types and was definitely helpful to production with an appreciable portion of inexperienced help.

As with every manufacturer active in war production, its end required that Western Boat Building return to competitive business. Located on Puget Sound where pleasure boating is probably as intensive as one could find anywhere, the company was confronted with an influx of high-class boats from eastern builders long established in the field.

As Western Boat itself was founded in 1916, the firm decided there was no reason why it should not participate substantially in the market at its own front door (rather, lapping on its own shores). Such participation would be accomplished by a better boat at a competitive price, the latter to be made possible by manufacturing economies.

Allen Petrich, one of five sons of Western's founder, Martin Petrich (all of them are engaged in the business), felt that the postwar trend in pleasure boats was toward smaller ones but that quality was short in those sizes. Quality in boat building appeared to be proportional to the length.

When a 26-ft. length was selected for the new boat, it was decided that the design should incorporate first seaworthiness, then comfort and performance. Improved performance would give greater utility by covering more distance in the time available. All of these points of quality would assist the trend toward smaller sizes, other trend factors being lesser crew required, greater ease in handling, and less expense for operation and maintenance.

Immediately upon the end of the war the design was commenced. Hull drawings were received by the plant in December, 1945, and tooling design was begun forth-

**• Notching frames for battens prior to assembly. Note jig used to guide each cut. Battens fit into the frames without further cutting, so precise is this mass method.**

with. Ken French, who had engaged in boat work previously and who was experienced in furniture production procedures, was secured to supervise the tool design and help initiate the production system.

The company felt that time was so important that it proceeded immediately with construction of the tooling, carrying it forward while the first boat was being built. The frame and plank jigs were built before the first boat and worked out very well. In fact, most of the hull of the first boat was constructed from tool-made parts. Trials of the first boat were held in November, 1946, and the major part of the tooling completed in that year. The balance has been largely finished by this time, so that the Fairliner production is practically 100 per cent tooled at present.

Future tool construction will consist of refinements to the tooling itself or any modifications caused by changes in the boat design, found desirable from time to time.

### Four-part System

The production system employed by Western Boat Building for the Fairliner is in four major parts:

1. Pre-fabrication.
2. Assembly
3. Painting
4. Outfitting

No more close subdivision of the operation than this appears practicable. Material procurement (engines, for example) and other problems require shifting of production personnel, so that a certain amount of flexibility has been found essential.

The pre-fabrication division includes the processing of the raw material (seasoned lumber) into both individual pieces and completed sub-assemblies. Examples of the individual pieces are these:

a. keelson
b. keel
c. stem facing
d. battens for all locations
e. planking for all locations
f. engine stringers

### Precision Carpentry

Each of these and the other individual pieces sent from the pre-fabrication shop to the assembly floor is completely manufactured. No cutting tool touches it on the assembly floor. It fits into place and is there glued, screwed, or otherwise fastened without further modification.

The most interesting feature of boat building, compared with other well known types of wood products manufacturing, such as furniture, is the great number of curves, bevels and angles involved. Straight lines are conspicuously absent.

A manufactured keelson, as sent to the assembly floor, resembles a tortured 2x8 upon which some grade school manual training pupil has been practicing surgery without benefit of anesthesia. Placed upon the hull jig, however, said keelson receives frames, keel, stem and other parts perfectly, with no modification. The keel jig, for example, is an affair like a box beam, about six inches square in cross section and somewhat longer than the keel.

The stock, cut to proper length, is fastened to one side of the jig with screws (clamps have been found unfeasible) and the whole assembly passed against a vertical head shaper. The shape of the jig rolls the stock around against the shaper knives so that the desired form is produced. Whereas it formerly took a man one day to produce a keel by hand cutting, with tooling he now produces it in 15 minutes.

### Jig For Each Plank

There is a jig for each plank in the boat. Plank stock is simply tacked to the jig.

Curved pieces, such as those for windshield frames, are produced by bending individual strips in a fiitting jig and then laminating the strips together with marine glue while in the jig. The completed piece curved in this manner retains its exact shape, compared with the overbending required with steam curving (due to partial re-straightening).

One outstanding postwar development is the new series of waterproof glues which set at room temperature (80°). Considerable research went into these phenolic resin glues, that give a truly lifetime bond.

Many small clamp jigs have been designed and built that would do credit to the metal working industry. Numerous special cutters have been ground to cut finished curves in one operation. Even special woodworking machines have been designed and built by Western Boat Building, including a notching machine that notches the frames for the seam battens.

The manufacture of curved molding and other curved pieces was offered by Western to a wood specialty shop in Tacoma as a sub-assembly production contract. When the specialty shop declined the work because it could not be done, Western took it over and did it; not, of course, without considerable trial and effort.

As previously mentioned, the pre-fabrication shop also constructs sub-assemblies. Following are examples of these:

a. hull frames
b. transom frame
c. house sides
d. house top
e. windshield
f. seats
g. joinery (lockers, cabinets, etc.)

These sub-assemblies are made up on jigs of jig cut or formed pieces. Some of them are good sized affairs, the house top being about 6x8 ft., for example. The windshield on the Sport Cruiser is about six feet wide, yet its fitting faces join in perfectly with the balance of the boat on the assembly line. A seat assembly, which hand-made would take three to four days, is accomplished with tooling in three to four hours.

A much higher degree of control is used by Western in building the Fairliner than is customary in the boat industry. Much of this production control was pioneering by Western.

In most of the pre-fabricating operations, no measuring rule is used. In fact, the use of a rule is discouraged. The pieces are pre-cut and pre-rabbetted.

An example of the accuracy of the pre-fabrication is found in the fact that the sedan top is pre-fabricated in one jig, and sent to the assembly floor. The hatch cover for the opening in that top is made in another jig and likewise sent below for assembly. When installed on the top, the hatch cover makes a perfectly rabbetted, watertight fit.

Another example is in the pre-fabricated house sides. These must be able to accommodate accurately the window frames: stretched metal affairs requiring a fit within 1/64 inch.

As the production system develops, there is a tendency to make the sub-assemblies in the pre-fabrication shop more and more complete. This means the assembly line will handle fewer and larger units to make up a complete boat.

Many of the sub-assemblies are composed of laminated sections for two reasons: economy and strength. The laminations are made in an ingenious press designed and built by Western for itself. The press will handle any piece for the 26-ft. boat and the clamps can be arranged as required for various parts. Markings on the clamp frames permit immediate setting of the clamps for any piece, without measurement.

The production system for the two models of the Fairliner involves some thousand individual forms and jigs.

### Assembly by Number

Second major division of the production system, the assembly line, is on the floor below the pre-fabrication shop. Individual pieces and sub-assemblies delivered to assembly from pre-fabrication are stored on each side of the assembly line on suitable racks, every rack marked with an identifying number so that there is no doubt where its contents go on the boat. Each and every plank, for example, is formed for final fit in the assembly and each has its own number.

All of the pre-fabricated pieces and sub-assemblies are completely interchangeable; any one of them can go on any boat. The assembler simply takes any duly inspected part from the storage rack or bin and puts it on the boat on which he is working: it fits.

The first point of assembly is the hull jig, of welded structural steel, on which the hull is assembled inverted. Western has two of these. The original wooden jig had too much come and go with humidity and temperature for the closely tooled set-up used. In addition, the steel jig is much more free from bracing, giving easy internal access.

On the hull jig, the pre-fabricated frames (already notched for seam battens, believe it or not), the keelson, stem, transom, keel, floor supports and power plant supports are placed and assembled with screws and bolts. Practically no cutting or fitting tools are employed: only hammers and power-driven screwdrivers and wrenches are used, with some final drilling. Many of the holes have been previously placed in the pre-fabrication shop.

Next, while still on the hull jig, the hull frames receive their seam battens in the pre-cut notches. This must be seen to be believed, but it's true nevertheless. After battening, the pre-formed planking is applied and makes practically a jointer fit.

As previously mentioned, each plank is numbered and they are made up in sets, one per boat, to avoid left-overs. No fairing or trimming is required except occasionally removal of a negligible sliver in one of the odd shaped planks near the bow. Otherwise, the completed and unsanded planking job presents a tight continuous surface with no raised edges or protuding butt ends. Sanding becomes merely a process of going from a planer finish to a sanded one.

It has been found that two men on a hull is the most efficient number for planking. Side planking is 1/2-inch single and the bottom is double planked: 1/2-inch inner and 1/4-inch outer.

### Belt Sander Is Best

After planking, the hull is removed from the hull jig and placed on a dolly for the rest of its trip down the assembly line. The next step is sanding, and here is one place where no better or more economical arrangement has been found than simply a good man with a belt sander. Possible arrangements of a hull sanding machine were considered but found to be impractical. It takes one man about a day and a half to sand a hull.

Next, the covering board and decking are installed, coming as pre-fabricated units. Engines are then placed with an overhead crane and the drives and shafting installed. Two 50-gal. welded 52S aluminum fuel tanks, built by Western, are installed. Engine controls and steering are placed. The engine installation, incidentally, is made with the flywheel aft and the V-drive forward. The engine setting and general arrangement used permit a low shaft angle, which improves propulsion efficiency.

The house sides, front, and top, each a pre-fabricated unit, are then added. The joinery work: partitions, lockers, cabinets and doors are installed. As with other parts, the cabinets and interior fittings are delivered to the assembly floor as completed units. The doors are modernistic slab affairs. The plumbing is put in, the wiring and the ceiling insulation. When the leatherette ceiling has been placed and all of the trim completed, the boat is ready for the paint shop.

Next, the completed, but unpainted, boat is rolled on its dolly out onto a balcony where a large overhead crane can reach it and lower it to the next floor below, whereon is located the paint shop.

Drawers, hatch covers, small doors and other loose or readily fastened parts are sent directly to the paint shop from pre-fabrication, by-passing the assembly floor. These parts are painted separately from the boat and then installed.

The completed boat is painted, has its upholstery installed, and small equipment placed while in the paint shop, being finished ready for the water.

Western Boat Building Company is largely self-contained, even having its own pattern shop.

*(Concluded on page 40)*

**• Joiner operating in prefabrication shop. Shapes hanging in background are automatic bevel frame jigs. Shaping keelson once took a day, now done in 15 minutes.**

Obviously, the tooled production system can use some help that are not thoroughly experienced all-around boat builders. While this was useful during the war, it is proving equally so now. The shortage of boat builders is greater at present. Older men who came out of retirement to help the war effort have gone out of circulation again. The building boom with its higher wages has taken most of the carpenters, boat or otherwise.

During times of maximum demand, the Fairliner production uses some 40 men. While figures on man-hours per boat for the tooled system versus the custom-built system are kept confidential, Western advises that through tooling the man-hours for assembling have been reduced by more than 50 per cent.

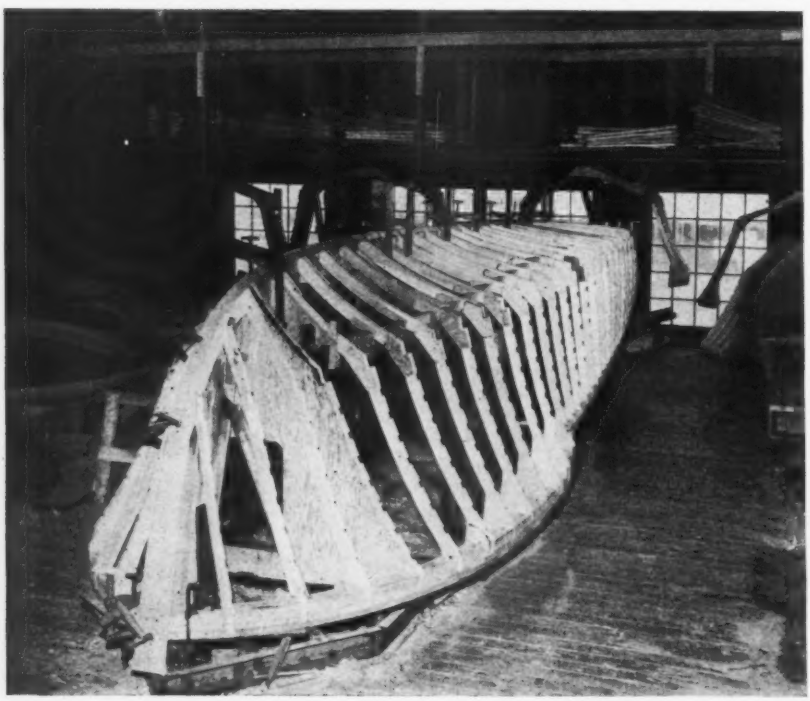
The supervision is, of course, made up of all-around boat builders. Some of them were developed during the war and stayed on after it. While more control would ordinarily be needed with less experienced help, not as much supervision is needed for a tooled job. Therefore, the supervision problem fairly well balances itself out and is no greater than with custom-built boats made by craftsmen of long all-around experience.

Inspection is quite closely tied in with supervision. Most of the detailed inspection is made in the pre-fabrication shop. Parts that pass there give no trouble on the assembly line.

The tooling set-up has contributed to solution of the material problem. It has reduced the variety of dimensions of lumber that must be obtained. It also has permitted more complete utilization of lumber stock. By arranging the layout of pieces cut from marine plywood, for example, nothing larger than a piece four inches square is wasted. Lamination of left-over pieces of frame stock into material for other parts has reduced lumber waste to small pieces of kindling.

**• Assembling cruiser tops on a special form. As far as is known, Fairliner operation is only completely tooled cruiser production system on West Coast. Nearest is in Michigan.**

**• Frames assembled on welded steel hull-jig, which is less subject to change on account of weather. Tolerances are so close no fairing or planing is required on members.**

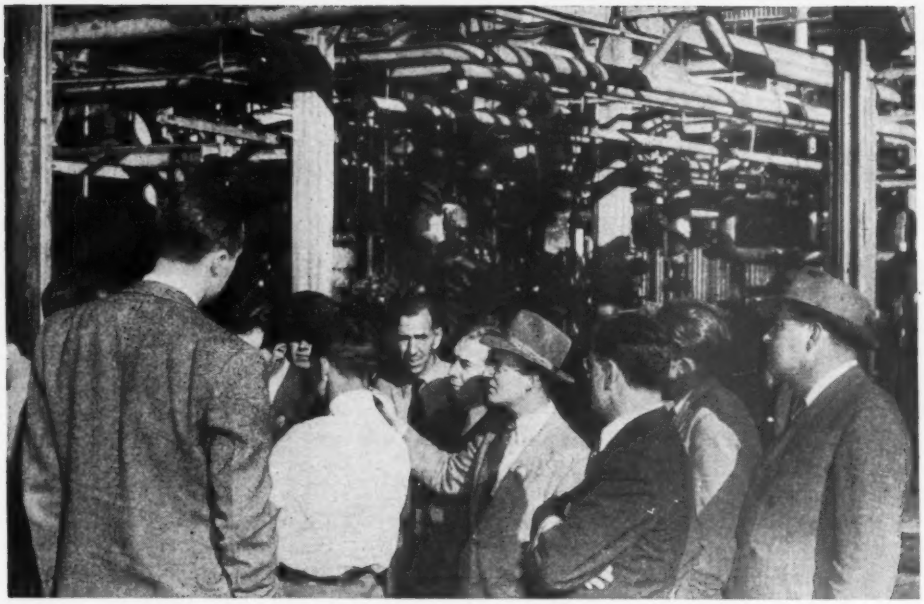


Tooling of its production line is not regarded by Western as an appreciable handicap to any desired changes in the boat. The hull design was long studied and given thorough experimental trials before being fixed, so that fundamental changes in it are unlikely. A satisfactory boat interior arrangement is rather stable, and changes thereto are gradual. While small boats have changed over the years, with more beam, rounded corners, newer equipment, and different power plants, the changes—as just stated—are gradual. A boat design is not subject to the same flights of fancy as is the design of its land-borne cousin, the automobile.

Moderate changes in boat design or in the design of the tooling itself would be handled by Western Boat with its own staff. If a complete new boat were to be tooled for, the company would again engage specialists in tool design, primarily to complete the job promptly.

As far as is known, the Fairliner operation is the only complete tooled cruiser production system on the West Coast. The nearest set-up, geographically, of this nature is one in Michigan.

This tooled production system for boat manufacturing would certainly be no venture for the faint-hearted. It involves design, manufacturing and economic problems of the first magnitude, which require faith, experience, hard work and resources to overcome. Western Boat Building has put forth all of these and made an outstanding industrial contribution to the Pacific Coast region.



**• Members of a General Petroleum sales training class get much more than a series of lectures on selling. They go out on field trips to all parts of company refineries and learn first hand how their products are manufactured. Dealers and distributors are encouraged to take courses as well as special sessions.**

# Organizing Sales Training Program Makes Expense an Investment

By C. W. PORT
Manager, Sales Training
General Petroleum Corporation, Los Angeles

BY ONE method or another, every effective salesman has acquired or is going to acquire full information on his products and their application, on his company and its policies, and on the science of selling. Regardless of the method used by the salesman to gain the knowledge, *that method is paid for to a large extent by his company.*

If the salesman is forced laboriously to dig out the information by himself, or to obtain it by endless questioning of company personnel, the cost of this "training" is frequently observable in lost time, wasted energy and unreliable or inadequate performance. If the salesman uses a trial-and-error method, the cost to the company is again visible in low sales volume, in poor customer relations, and in failure to estimate the market potential in the area.

Since the expense is inevitable—because in one way or another the company is spending money to train its salesman—the logical procedure is for the company to make adequate provision for the training, i.e., to *organize and direct* the entire effort. In this way it can turn the expense into an investment. From our experience such a program of sales training, well organized and executed, not only pays for itself in increased sales volume, but offers many benefits not otherwise obtainable.

In General Petroleum Corporation, the sales training program is unique in that it is not part of a training program for any other type of employee. It is a completely separate activity. In many companies sales training is part of an overall educational program and, under such an arrangement, it often receives decreasing attention until it deteriorates to an ineffective level.

Although it is a separate department, General Petroleum's sales training has a close relationship with the sales promotion activities of the company. This has proved advantageous in two ways. First, it insures that existing sales campaigns are taught as part of the general sales training program, so that salesmen and dealers can combine and direct their activities most effectively. Second, this relationship gives the sales training department some limited responsibility for the creation of sales promotion campaigns. As a result, sales training is constantly kept on a practical, realistic, down-to-earth basis, and does not become merely academic.

While our experience has been with a relatively large sales and dealer organization, there is no reason why the principles and practices cannot be used effectively by even the smallest companies. Instead of creating a separate department, the responsibility may be assigned to one person, if only as a part time function. But the job, as such, must be clearly outlined and definitely assigned to a qualified, interested executive rather than being added to the duties of an already-busy sales manager or other sales personnel. Thus, sales training becomes a project apart from normal supevisory routine, and is not handicapped by consistently taking second place to immediate sales problems. Even in a small organization, then, an effective training plan can be worked out that should more than pay its way through increased sales volume and better customer relations.

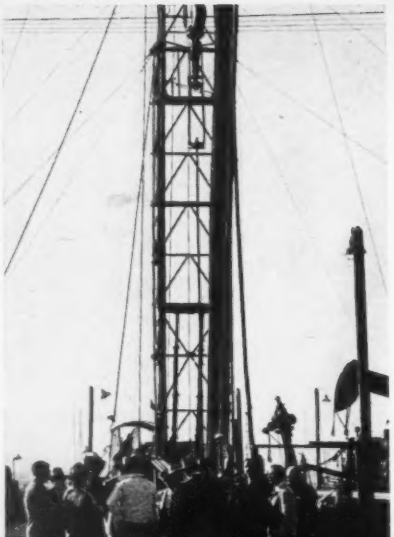
When A. H. DeFriest became vice-president and director of marketing, he had not forgotten the difficulties he encountered as

a novice salesman whose sales equipment included only an order book, a map of his territory, and keys to a company car. Mr. DeFriest's enthusiasm for an organized system of sales education, and his recognition of the value of trained representatives, launched and perpetuated the training program. Formal training began at the end of the depression, continued on an expanding scale throughout the war, and now includes distributors and dealers as well as the company's own personnel.

The present program, therefore, represents an evolution through many years of experience. We did not start out with a complete, all-inclusive course. Instead we moved slowly, step by step, from a most unimpressive beginning. This method of development is recommended to anyone contemplating such a program. If the plan is kept simple at the start, it can be built soundly, and many of the difficulties caused by haste can be avoided.

The task of organizing the program was handled by C. A. Turney, whose wide experience and reputation as one of the company's most capable sales managers ideally equipped him for the work. Before setting up specific material or classes, Mr. Turney decided to get the ideas and enlist the cooperation of the entire field management. This was done by a series of meetings throughout the marketing area, in which men on the "firing line" threshed out with Mr. DeFriest the basic philosophy and the specific materials on which the training should be founded.

When Mr. DeFriest moved to an executive position in the New York headquarters of Socony-Vacuum Oil Company, the sales training program was extended and amplified by Vice-President C. S. Beesemyer, who also instigated the addition of special courses in principles of salesmanship, through the Sales Analysis Institute.



**• A sales training class visits an oil field to watch a drill rig in operation. Students follow petroleum from well to package.**

One basic principle then established governs selection of the faculty for our sales training courses. There are two systems by which such instructors can be selected for any school program. One is the use of a series of specialists who come into the class for one or two sessions. These men teach only the subject with which they are intimately familiar, and the result is apt to be somewhat disjointed, and might even produce an apparently contradictory series of lectures.

It was our decision to use the alternate method by which one man runs the complete course, using material prepared by specialists, of course, but having intimate contact with the group for the entire period. We feel this decision was sound from the results obtained. There is complete coordination of the program from start to finish, and, because of the amicable relations developed, students enter into the discussions with greater freedom. The teacher also has the advantage of working with each man for at least a month and hence can give a more accurate appraisal of his ability and interests.

The success of any sales training program will depend so much on the men who prepare and present it that these appointments must always have careful consideration. It is our belief, based on our experience, that training personnel should come from within the industry. Men who are to teach should have a proved record in selling, but even more important, they should have the ability to teach and a liking for that work.

The manager of the sales training department conducted the first classes in a tiny store building, and at the same time began to develop instructors with whom the program could be enlarged. Growing demands of the sales training program required moves through four locations and final acquisition of a separate building on Glendale Boulevard. This Institute headquarters has three classrooms, offices for instructors, library and property rooms and all the other facilities of a modern school.

Many of the original sales training courses were given to new employees and, when the value of these courses became apparent to them, the program was then expanded to include more experienced salesmen. Questionnaires were sent to each salesman four months after the completion of his basic training, to determine his opinion of the help that the course had given him. These reports, now an established part of the procedure, have been so uniformly enthusiastic, and so many unsolicited testimonials have been received by the company, that the value of the sales training program is no longer in question.

Since little written material was immediately available for the use of instructors at the outset, our first problem was to develop our own approved texts. We found that an effective means to accomplish this was to ask experts, from within our own company, to address groups of sales personnel on specialized subjects. Each talk was recorded in its entirety and later was edited to provide a manual on that par-

**• Among the numerous visual aids used by instructors in General Petroleum's sales training classes are various cutaway models of automotive parts. By studying such material salesmen can discuss mechanical details with customers in an intelligent manner.**

ticular field. These manuscripts were, of course, supplemented from time to time and integrated into an overall program.

In this way, the texts become a consensus of authority rather than the personal ideas of any individual. Since 1939, nearly 150 separate texts have been prepared, some of which have been revised as many as 20 times to keep them up-to-date.

In addition to texts, the Marketing Institute uses all the recognized methods of modern education. The staff has prepared a large number of slide films, hundreds of individual slides, dozens of exhibits of equipment, machinery, etc., working models, notes for class reviews and a complete system of examinations.

The hundred or more individual subjects can be classified broadly as follows:

1. Company and industry information
2. Product knowledge
3. Machines that will use products
4. The customer's business
5. Selling and merchandising methods
6. Organization of the man's own job

The basic training program, of four weeks duration, gives each salesman the information and training that he needs to hold his job. An advanced course, also of four weeks duration, is designed to prepare the man for upgrading in his knowledge and responsibilities.

Fundamentally, the same information and many of the same methods of teaching are extended to distributors and dealers through sales manuals used by company representatives. Texts, notes, sound-slide films and other materials may be used with an individual dealer or in group meetings throughout the territory. Training given at one time may include only one subject such as "Driveway Procedure" or "Trimming Windows," or it may encompass several phases of dealer education.

Distributors are invited to attend the complete training courses at the Institute, and many of them have done so. All distributors are invited to annual four-day sessions at key points throughout the marketing territory. These sessions are attended by 80 to 99 per cent of all distributors, and they offer in condensed form the same type of material given at the Institute. Because the total number of subjects is so great, each year's meetings can be on new subjects.

Courses in the General Petroleum Marketing Institute were designed to teach products, procedures, policies and merchandising, but it was felt that additional education in principles of salesmanship would be desirable. Sales and training executives in our company made an exhaustive study of all the available training methods, and recommended the Sales Analysis Institute.

The course provided by the Sales Analyses Institute was adapted to our needs and was set up in addition to existing training programs. The entire sales force and sales management group have taken or are taking this course. The program is now being extended to distributors and to representatives of various other company departments.

All sales training activity at General Petroleum is part of the Marketing Department, under the guidance of Vice-President J. C. Sample and the general manager, marketing department, V. A. Bellman.

We feel that our company is unusually fortunate in having the wholehearted support of management for the sales training program. Any such undertaking can be successful only to the degree that this support is given, so that necessary cooperation and proper emphasis is given the sales training department.

**One of the first installations of radar on a fishing vessel has recently completed its maiden voyage and come back with its debts paid and cash in the bank, according to the owner, M. O. Medina, in a report to the Westinghouse Electric Corporation. Installed on the Normandie, largest tuna clipper on the coast, use of the radar cut nearly 20 days off her spring cruise and enabled her to return to port with a full load of tuna in 76 days, while two other boats, typical of the fleet, brought in ½ and ⅔ as much in trips of 135 and 141 days respectively.**

**The radar proved its worth first during preliminary bait-catching operations when the Normandie had no difficulty in keeping track of her 50-ft. bait boat in a heavy fog. She was later able to negotiate narrow channels and shoal waters in fog or darkness so that fishing operations were not interrupted.**

**The console-type Westinghouse radar, mounted in the pilot house, has a seven-inch scope for sharp image and focus, and has a range of from 80 yards to 40 miles. It operates on the 3-cm band to give a bearing resolution of 2 degrees, and special electronic circuits are combined to suppress "sea return"—the tendency of some radars to pick up the image of wave tops in rough weather.**

# Smog Problem Not a New One; You May Get It Next!

***Survey shows Smog has plagued Southern California since 1904; various industries point the finger at one another but County Commission has not yet determined who is chief offender; tests reveal acid sulphates in the atmosphere***

By HOWELL H. BARNES
and
EDWARD S. FELDMAN

THE growing trend of public opinion which inclines to the belief that in urban communities we are as much entitled to the purity of the air we breathe as to the purity of the food we eat, is forcing steps toward elimination of objectionable air pollution — or in the language of the garden variety of Southland commuter —"Smog."

This poses several nice questions which must be faced if the "will-o-the-wisp" aspects of smog control are to be eliminated and its real values established. Two questions, at least, must receive consideration:

1. What are the elements which pollute the atmosphere to the detriment of health and the destruction of property?
2. Where do they come from?

Many people whom we find concerning themselves with the need for the control of atmospheric pollution, carry the somewhat naive belief that this is a new problem which has come upon us, perhaps a creation of our industrial giants or the unfolding of our free economy generally. This is not necessarily true. In fact, smoke abatement programs have had a long, if not wholly successful, history, both in the United States and abroad, because of this frequently misplaced emphasis.

As far back as 1661 there was an embryonic tendency to charge that commercial and industrial enterprises were the only casual factors in atmospheric pollution. Over many years in the United States, no less than 80 cities, proceeding on this theory, have adopted smoke abatement ordinances.

Here in Los Angeles a search of local ordinances reveals that in 1904 the Mayor and City Council collaborated in the adoption of an ordinance which carried the following title: *An Ordinance Prohibiting the Use of Petroleum or Any Product Thereof for Fuel, in Such a Manner as to Allow or Cause the Escape of Soot or Smoke.*

The next year the Mayor and City Council teamed up again to pass the following ordinance:

"Section 1. It shall be unlawful for any person, firm or corporation to cause, permit or allow dense smoke to issue or be emitted for any period of time exceeding ten consecutive minutes, from any stationary flue, chimney or smokestack in the City of Los Angeles, owned, used or controlled by such person, firm or corporation, or to cause, permit or allow soot to issue or be emitted from any such flue, chimney or smokestack, unless said smoke or soot shall be discharged to the open air at a height of not less than one hundred and twenty-five feet."

"Section 2. Any person or corporation violating any one of the provisions of this ordinance shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine of not more than $50, or by imprisonment in the City Jail for not more than twenty-five days, or by both such fine and imprisonment."

These are the rather uncertain forerunners of our present-day comprehensive air pollution control laws.

The year 1907 was marked by great agitation and momentous developments in smoke control in Los Angeles. We find, for example, the *Los Angeles Express* reporting that Dr. George H. Kress, "As Secretary of the Pure Food Committee of the County Medical Association . . . led the fight against the smoke nuisance," and that he finally "outwitted" the Los Angeles Gas and Electric Company by getting the City Council to adopt an ordinance "Regulating the discharge of smoke from flues, chimneys, smokestacks, or other structures or appliances from which smoke is discharged, in the City of Los Angeles."

This ordinance differed from the prior one because it applied to moving stacks (e.g., locomotives) and adopted a definition of the quality of smoke to be emitted (not "of a greater degree of darkness than Number One Scale. . . .").

***Editor's Note: This is the first of a series of articles to be published dealing with the problem of "smog" control. To give readers a background for intelligent thought on the subject, the authors have devoted themselves here to an historical review of "smog" as it relates to the West.***

Throughout the country, it may be noted, whenever campaigns are started to create legislation controlling air pollution, the arguments advanced follow a certain more or less defined pattern.

First, it is pointed out that the health of the population is endangered by air pollution. In Los Angeles, for example, the smog has been variously charged with causing, or aggravating, rheumatic fever, heart disease, colds, asthma, sinusitis, streptococcus infections, and so on.

Second, it is demonstrated that air pollution is caused by waste of energy, in the sense that air polluting emissions are really waste products from incomplete combustion. In short, our City Beautiful should not be defiled by uncleanliness resulting from dirty smoke, and the like.

Third, it is claimed that the flora and plant life is being destroyed. Here in the Southland where citrus fruits are basic to our economy the fact that the oranges themselves are smaller this year than usual has also been laid to the smog.

This pattern is discernible in California by examination of the accounts of methods used to whip public opinion to a fury about the smog of the Southland. All the points mentioned above have been marshalled many times in the press and in public gatherings in urging public officials to crack down on those thought to be contributing to the nuisance.

Yet local action by the City Health Department under the ordinances mentioned before (and later revisions) or under more general nuisance laws enforceable by action of the district attorney seems to have been ineffective, and the public outcry was for more action on a state-wide basis. Several commissions were appointed to study the subject, and the end result — probably to the surprise of a good many people — was the passage of Assembly Bill No. 1 (mark the number!) by the California State Legislature. "AB-1" became law on June 10, 1947, as an amendment to the Health and Safety Code.

Thus was started a vast and new experiment in atmospheric pollution control which is without parallel at the present time with respect to broadness of its approach — both in matters to be attacked and the area to be covered. "AB 1" is the first statute of its kind passed in the United States by any state legislature. What is done here will undoubtedly form a pattern for similar action elsewhere across the country — and this in spite of the fact that, as mentioned before, nearly 100 smoke control ordinances are already on the books.

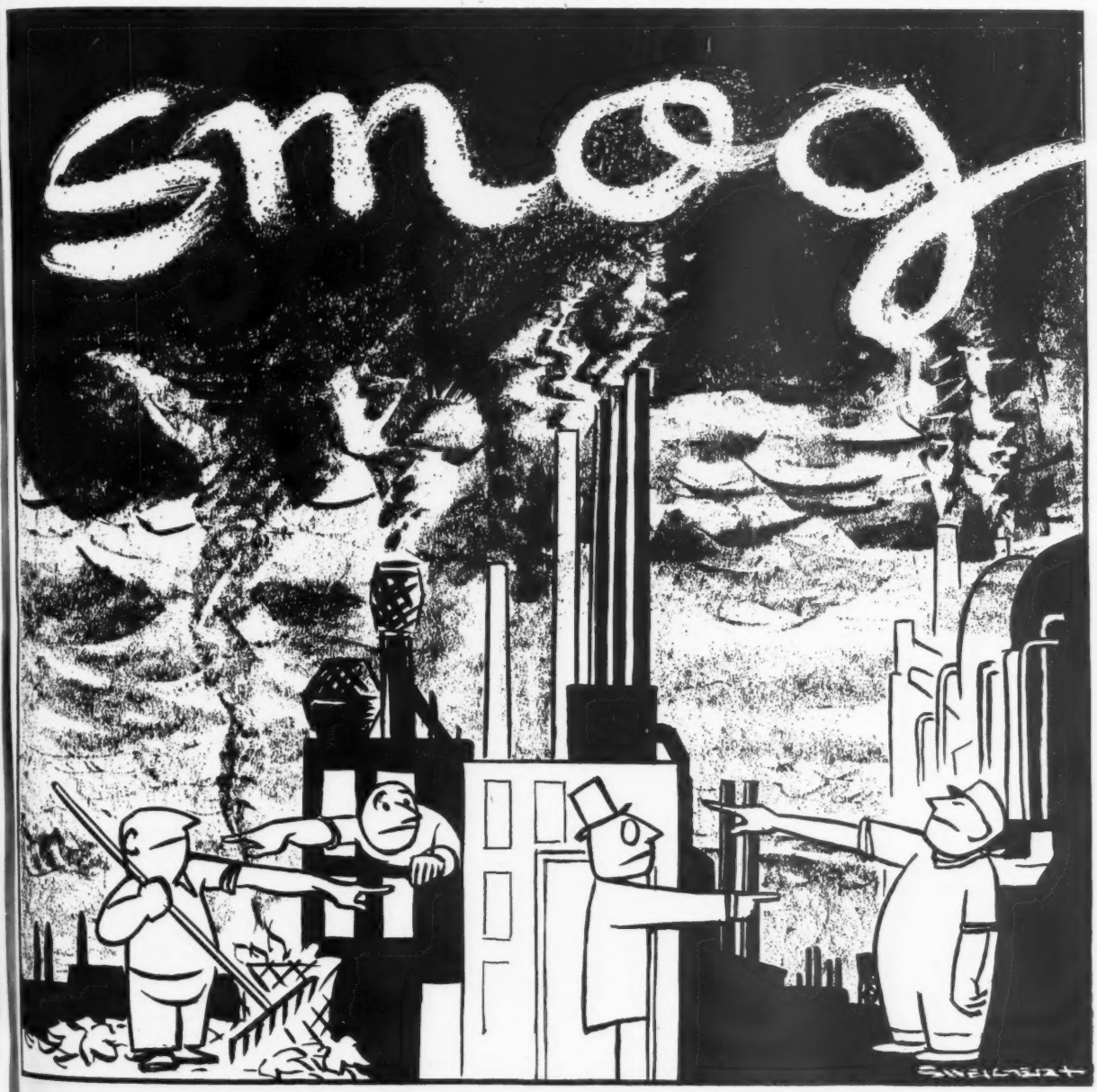
The new law allows any California county government (Board of Supervisors) to establish an "Air Pollution Control District" whenever it finds that the air within the county is "so polluted with air contaminants as to be injurious to health, or an obstruction to the free use of property, or offensive to the senses of a considerable number of persons, so as to interfere with the comfortable enjoyment of life and property." An air pollution control officer may be appointed to head up the district, and in Los Angeles County, Dr. Louis C. McCabe, a distinguished expert in this field, has held the office since October 15, 1947.

Certain prohibitions are set out in this law, the violation of which is a misdemeanor, and which may be enjoined in a civil action. For example, the law declares that no one is to discharge into the atmosphere any "air contaminant" for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that "designated as No. 2 on the Ringlemann Chart . . . or of such opacity as to obscure an observer's view to a degree equal to or greater than" does the smoke just described. The Ringelmann Chart mentioned is popularly known as a small rectangular card with various shadings from white to black around a hole in the top center of the card. The chart is held toward the smoke emission and a comparison is made of the density or opacity of the emission with the graded shadings on the card.

Now smoke is the only air contaminant which has any specific standard of control

*(Continued on page 46)*

**• Southern California smog has been blamed on everything from backyard incinerators to foundry and refinery smoke. Communist party hasn't been accused yet. Problem appears to be a case of pointing "to the mote in thy neighbor's eye" while wiping away smarting tears.**



written into the California law itself. With reference to other contaminants (and these include charred paper, dust, soot, grime, carbon, noxious acids, fumes, gases, odors, particulate matter or any combination of these), aside from the general prohibition against nuisances, the air pollution control officer will set the amount to be emitted.

In Los Angeles County no person may discharge into the atmosphere any particulate matter in excess of 0.40 grains per cubic foot at the point of discharge. Lead, zinc oxide, and sulphur compound fumes are curbed, too. Other limitations or standards may be expected in the future as the air pollution control officer finds that such other emissions pollute the air.

### McCabe Report Blames Sulphur For 'Smog'

*Following are excerpts from a special report to the Los Angeles Board of Supervisors by Dr. Louis McCabe, director of the County Air Pollution Control District:*

*"On Aug. 14, we first collected the droplets (aerosols) which constitute the liquid phase of the smog . . . chemical tests show the material to contain sulphates and to be acid in character.*

*"The greatest quantities of sulphur compounds are released to the atmosphere in the Los Angeles area from the refineries, chemical plants and the burning of fuel oil by other industries. The sulphur balance supplied me by the petroleum industry some time ago indicates that 822 tons of sulphur dioxide enter the Los Angeles atmosphere each day. Twenty-two tons of this comes from gasoline burned in automobiles and 12 tons are released by the burning of diesel oil.*

*"Our observations are that sulphur compounds contribute in great measure to the smog.*

*"You know of our unsuccessful attempt to secure a surplus ammonia plant for Southern California from the War Department. Cheap ammonia would make it possible to use the ammonium sulphate or the ammonium sulphite-bisulphite process to remove sulphur dioxide from stack gases . . . if the War Department were to allocate a surplus ammonia plant to this area there is a relatively easy solution to the major part of our smog problem."*

The method of enforcing the law is through a system of permits. With certain exceptions, every person who discharges any air contaminants must have one. (A permit for equipment in existence and operation prior to February 1, 1948, was automatically granted.) This permit may be suspended or revoked, however, if any violations of law occur. Anyone operating without a permit or contrary to its terms may be guilty of a misdemeanor. Furthermore, the air pollution control officer may require necessary information and it must be supplied by the permittee.

If one is unhappy with a particular ruling of the air pollution control officer, he may go to a hearing board which is composed of two lawyers and an engineer. The board may grant a variance or other relief from the general limits of the law as they feel the facts warrant.

Incidentally, it should be pointed out that the air pollution control officer does not, himself, permanently revoke a permit. Rather, he must request the hearing board to do this.

But, if one is not pleased with the ruling of the hearing board, he may then turn to the Superior Court and obtain a trial *de novo,* that is, an independent determination of the reasonableness and legality of the prior decisions on all issues of law, facts, and mixed questions of law and facts and opinions involved in any case.

It is readily apparent that the air pollution control officer is given tremendous powers to accomplish his objectives. Unless his power is exercised most carefully and with a sense of responsibility, he may do incalculable harm in seeking to purify the atmosphere. Millions of dollars invested in existing plant facilities may conceivably be made worthless for the lack of operating permits, and in some cases industry may be driven away from the area. As the population of this area is to a great extent supported by this industry, the above contingency is not to be taken lightly.

Current research does indicate that the causes of smog are exceedingly complex, and that we must, in the words of the present Kress committee, "deal not only with deleterious items resulting from unconsumed carbon and combustion wastes from industrial establishments, transportation activities, and incinerator practices, but also with topographic, meterologic and climatic factors." (Thus, 40 years later, we find our good friend, Dr. Kress, battling vigorously to eliminate air pollution as chairman of a committee of 10 named by the Los Angeles Medical Association.)

But industry has not been content to wait for the long and heavy arm of the law to descend and perhaps to destroy it. Much effort and money have been spent in research and improvement. The Los Angeles Chamber of Commerce has guided industry into doing something for itself, in many cases, having established several committees of scientists, engineers, civic officials and industrialists who are constantly considering causes and cures of air pollution.

The oil industry, gray iron foundries, copra crushers, lumber dealers, furniture manufacturers, roofing manufacturers, cartage firms, railroads, and so on, have pooled the efforts of their respective memberships to control illegal emissions and to assist in the establishment of reasonable standards. Their technicians have worked closely with the officials of the air pollution control district to adopt joint programs of analysis and improvement.

The finger has been pointed to industry as chief offender. We have seen that this actually remains to be proved, since there is no assurance that if industry were eliminated from southern California, smog would leave, too. By dispensing with the necessity of permits for mobile equipment, backyard incinerators, home heating equipment, and the like, the California law takes much of the onus for our murky conditions from some very real sources. The general public must be educated to realize that it contributes to the smog, too, and that efforts must be made to control these contributions.

### Los Angeles Paper Demands a Showdown

*"Whatever it is (smog) the two million inhabitants of Los Angeles are tired of it. It is causing discomfort and probably a great deal of illness. It is also marring the looks of what, for all a lot of tourists may know, may be a very beautiful city. These people are now looking for action and they do not care whether it is taken against some oil companies, if they are to blame; against factories; against locomotives around the union station; against home incinerators or buses or somebody's old clay pipe.*

*"If we know what causes the trouble it seems an easy matter to set up certain well recognized rules, rules that have worked elsewhere, and then prosecute under the powers given to the control district anyone who violates these rules. It is absurd to believe that a community of two million or more persons must stand in sneezing, coughing, weeping awe of those who cause smog no matter how powerful they may be."*

—Editorial, Los Angeles Daily News.

With this all in mind the Scientific Committee of the Los Angeles Chamber of Commerce has recommended to local authorities that money be provided to finance:

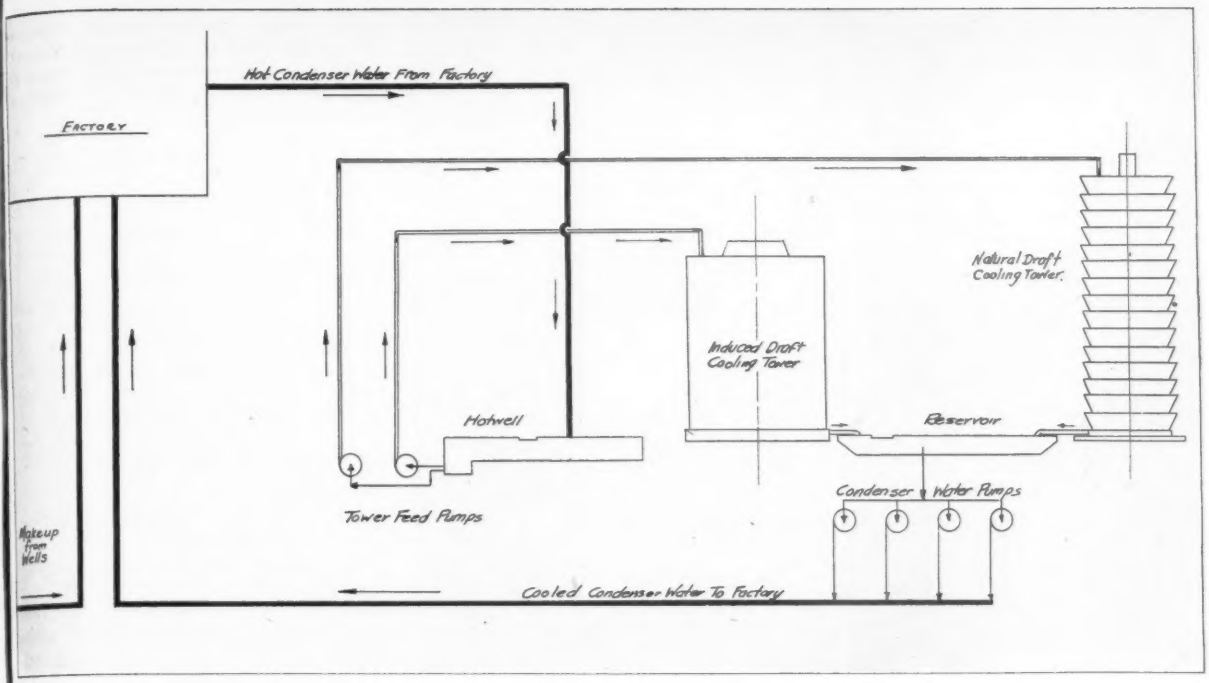
1. An adequate scientific research program having as its purpose the establishment of the chemical identity of the substance producing smog.
2. The development of methods and procedures for objective quantitative measurement of these substances and of the total smog content of the air.

It seems that we are certain to reach a point of diminishing returns in the program of local improvement unless we can enlarge our knowledge of the character of the pollutants. At the present time we are engaged in a kind of blind man's buff with nobody quite sure what he is seeking or that he will recognize it if he gets hold of it.

Additional research is a crying need. Industry is accumulating a great deal of knowledge in examining itself, as are the air pollution control people. But because so very little still is known, public authorities must indeed proceed cautiously in spite of the public cry for heads.

### Foundrymen Adopt Smoke Control Program

*A self-imposed investigation of possible contribution of smoke and fumes to the atmosphere was launched recently by 36 gray iron foundries in metropolitan Los Angeles. Samples are being taken from stacks to determine type of emissions, possible remedies, and whether certain foundries are in violation of anti-smog ordinances. A vice-president of Los Angeles Chamber of Commerce, Earle V. Grover, is head of foundrymen's committee.*




**A simplified diagram of water re-use system at the Alvarado refinery of Holly Sugar Corporation. Water is obtained from deep wells (lower left) and after passing through factory is returned to normal temperature by circulating through two cooling towers (right).**

# Cooling Tower Saves Water Costs at Holly Refinery

THE manufacture of beet sugar is one of the largest industries in the West, and because of its close relation to both problems, it has been selected for this, the third in *Western Industry's* series of articles on water conservation and industrial waste disposal. California alone harvested 2,792,000 tons in 1947 out of a national total of 11,405,000 tons of sugar beets, and the beet sugar manufactured in California last year had a retail value of approximately $60,000,000.

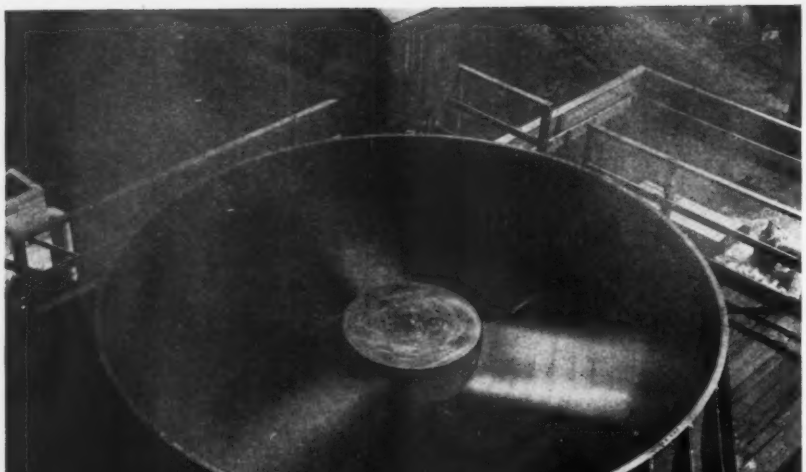
The industry has grown steadily since establishment of the first beet sugar refinery at Alvarado, southeast of Oakland in 1875, and today both the growing of beets and refining of beet sugar are an important part of the economy of most of the Western states. As a whole, the industry uses comparatively large quantities of operating supplies such as limerock, coke, cotton filter cloth, soda, ash, fuel—both gas and oil, sulphur dioxide, muriatic acid and various other chemicals, burlap, cotton and paper shipping bags, and outside services such as electric power. Approximately $8,000,000 a year is spent for these items.

Coupled with development of beet sugar in the West have come the problems of industrial waste disposal and adequate water supply. At a hearing in Oakland before the Assembly Interim Committee on Water Pollution and Industrial Waste, experts from the major sugar companies outlined the principal factors which have influenced present-day methods of beet sugar refining in the West: 1. Obtaining quantities of fresh water (a) without seriously affecting the local water table, and (b) pumping adequate water without causing an intrusion of salt water; 2. Disposal of waste water; 3. Prevention of pollution of the water supply and surrounding land areas by waste materials.

The Alvarado refinery, owned and operated by the Holly Sugar Corporation since 1926, is both the oldest beet sugar refinery in the country and one of the most modern in its solution of the problems mentioned above. Because of the requirements of the refining process there must be a large supply of fresh water on hand at all times when the plant is working, and Holly's refinery obtains theirs from deep wells on the property.

Over a period of years the company has conducted a continuing program of water conservation and this year — coincidental with the state-wide water shortage — installed the most modern system for water reuse that was available. By doubling the water-cooling capacity of the factory, the amount of water subject to being re-used was almost doubled, thus effecting an appreciable reduction in the amount of water pumped from the wells. According to A. J. Ratekin, refinery superintendent, the water passing through the system has not been metered, but the saving estimate is based on the sharp decrease in pumping time.

Focal point of the water-saving system is a pair of huge water-cooling towers. One, of the conventional type, was installed about 20 years ago during a modernization program and has been in continuous use ever since. It is 120 feet long and 50 feet tall, and may be briefly described as a rectangular wooden frame supporting rows of wooden baffles—slats set at an angle of about 45 degrees. Water coming from the refinery passes first into a "hot tank" and is pumped from there to the top of the cooler and allowed to trickle downward by gravity into the collecting basin underneath. It then passes into a "cold tank" and is ready for pumping back into the mill. During this process



**• This is the huge fan atop induced-draft water cooling tower at Alvarado. Revolving at 202 rpm. it sucks air up through baffles reducing condenser water temperature from 125 degrees to 77 degrees.**

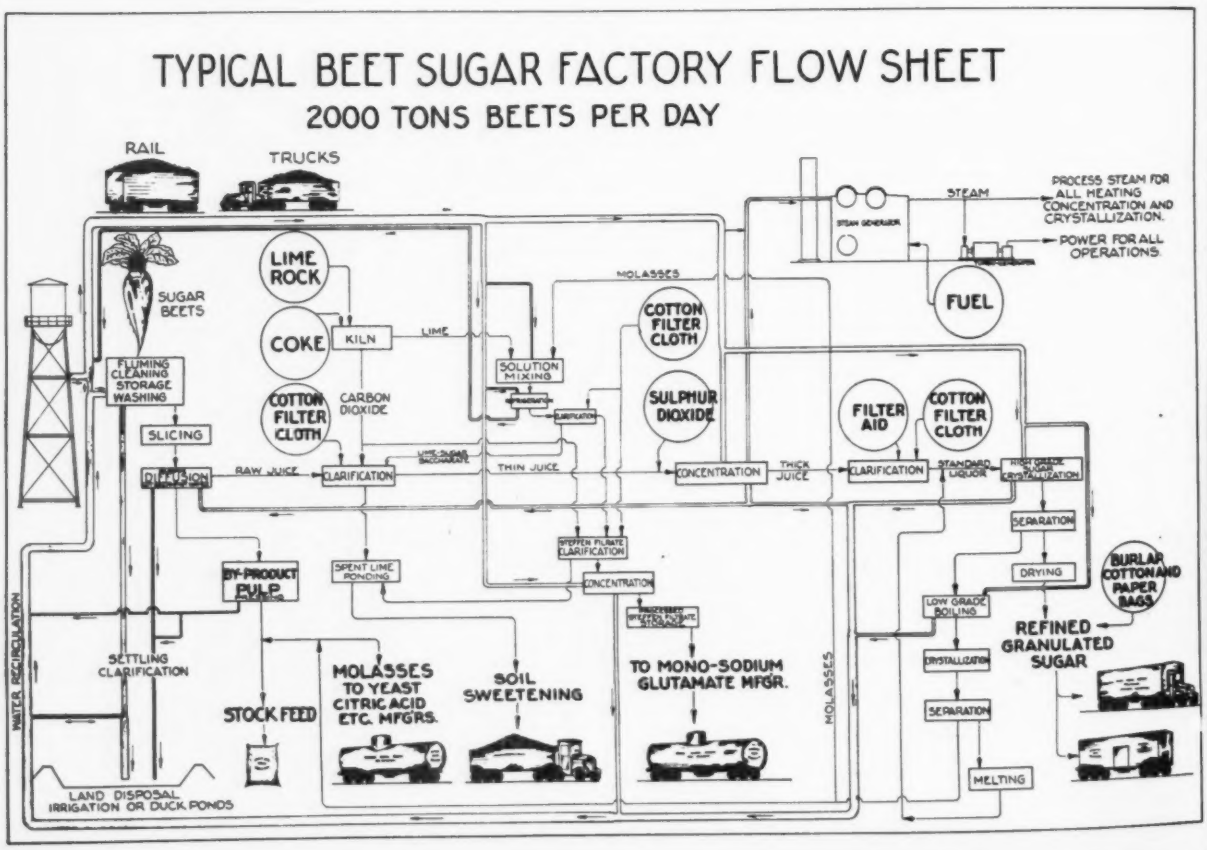
the water is treated for both hardness and reduction of algae.

A second water-cooling tower of the most recent design has been added within the last year, known as a Marley induced-draft cooling tower. The difference in basic operation between this type and the older one is that where the conventional cooling tower depends on natural movement of the air to accelerate cooling, the new unit contains a huge fan that sucks air in at the bottom of the tower and blows it upward through the descending water. It is therefore not affected by wind or lack of it.

The new unit consists of two batteries of baffles made of rough-sawed redwood, with a 60 hp. motor and fan located between them. The baffles are rough-sawed, not for economy, but because of the greater surface provided. The fan, with four blades, is 212 inches in diameter and revolves at 202 rpm. The tower designed for Holly Sugar has rated capacity of cooling 2,500 gallons of water per minute, reducing temperature from 125 to 77 degrees Fahrenheit when the wet bulb reading is 65 degrees.

In distributing the water for cooling, the new unit spreads it out over a floor above the baffles and the water drops through a pattern of porcelain-lined orifices. The pattern of these holes and their size varies according to the requirements of the installation. The sides of the cooling tower are completely enclosed except for louvres on the two ends near the ground, to allow air to be sucked in.

At the Alvarado refinery, the "hot tank" is an open air concrete basin, 30 by 55 feet, with perpendicular sides. Water is collected here from the condensers in the fac-



tory before passing to the cooling towers. The "cold tank" near by is about the same size, but has sloping sides, and is connected by a spillway with the hot tank. In the event that the cold tank overflows, the water runs back into the hot tank and is not lost. The hot tank has a float which controls a switch automatically regulating the pump operations. When the water reaches a determined level, the float starts or stops the pumps.

The cycle of water from wells to storage tank to mill condensers to cooling and back to mill goes on 24 hours a day during the operating seasons. The only loss of water is the small amount through evaporation.

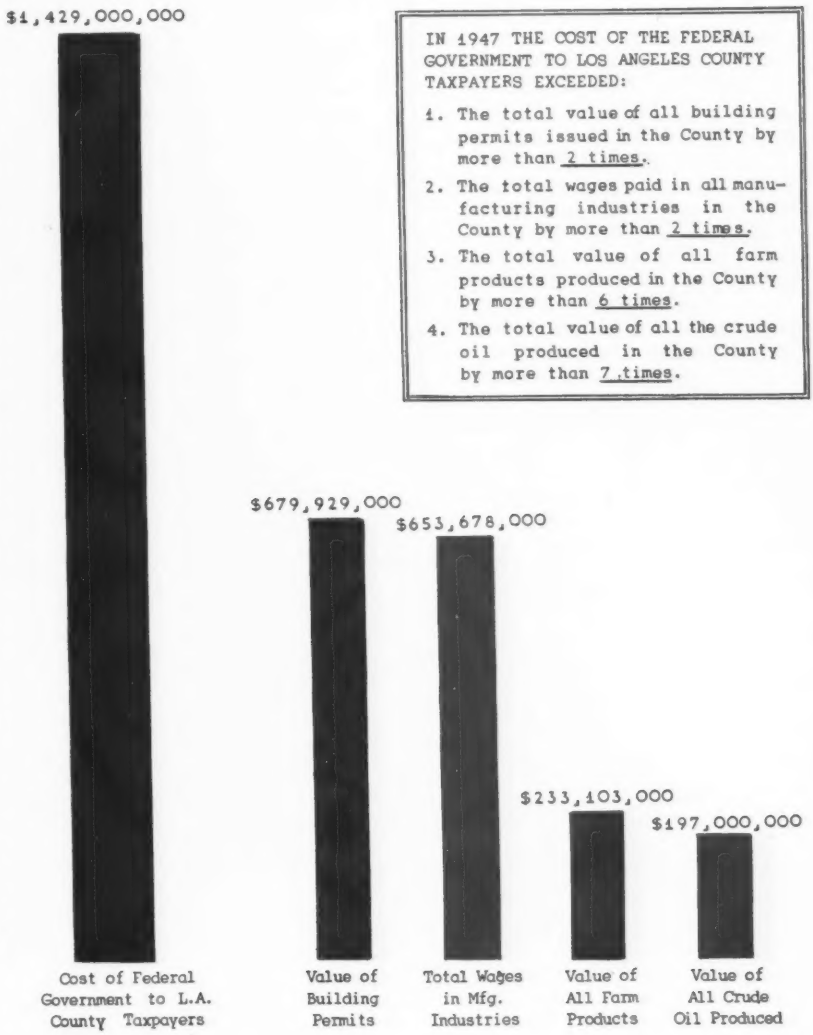
Accompanying this article is a chart representing a typical beet sugar refinery, which is not a plan of the Alvarado plant —it shows only about five per cent of the equipment used in the process—but does indicate how water is recirculated throughout the system. It will be seen that water is used in condensers in connection with the evaporators used for concentration of beet sugar liquors, for the concentration of Steffen waste, for the condensors on sugar crystallization equipment, and for mixing with molasses in the Steffen process for recovery of sugar from molasses.

All, or a portion of the water resulting from the beet-pulp by-product pressing operation is brought back into the recirculation system for beet fluming. In all cases the beet pulp is disposed of as a by-product. Dried beet pulp combined with molasses is competitive with barley on a price basis as stock feed.

Testimony before the Dickey Committee, mentioned earlier in this article, showed that of the eleven beet sugar factories in California, six operate the Steffen process for recovery of sugar from molasses (the Alvarado refinery is among the six), and the waste material resulting from this process, commonly called Steffen waste or Steffen filtrate, was for many years discharged along with the other waste waters. However, some years ago it was found that *mono sodium glutamate* could be recovered from this waste, and in the last four years, four of the six Steffen process factories in California have been equipped to process this material for delivery to International Minerals and Chemical Corporation. Formerly shipped to their plant in Ohio, the latter company now operates a huge plant at San Jose for converting this into a food product.

There is naturally a certain amount of water that cannot be recirculated and which must be discharged as waste, principally that used for washing the beets. At Alvarado, as at all refineries, there is a dry-cleaning station ahead of the beet fluming operation, where most of the dirt is removed along with leaves, tails, tops and any weeds. However, the water does contain a certain amount of silt, but its discharge into a clarifying system removes virtually all of this.

COST OF FEDERAL GOVERNMENT TO LOS ANGELES COUNTY TAXPAYERS IN 1947 WITH A FEW COMPARISONS




IN 1947 THE COST OF THE FEDERAL GOVERNMENT TO LOS ANGELES COUNTY TAXPAYERS EXCEEDED:

1. The total value of all building permits issued in the County by more than 2 times.
2. The total wages paid in all manufacturing industries in the County by more than 2 times.
3. The total value of all farm products produced in the County by more than 6 times.
4. The total value of all the crude oil produced in the County by more than 7 times.

**Cost of the Federal Government to Los Angeles County has skyrocketed to heights beyond the comprehension of the average citizen, according to the Federal Affairs Department of the Los Angeles Chamber of Commerce. Ten years ago the cost of Federal Government was about one-half the combined cost of State, County and City governments. Today, the report states, the Federal cost is 2½ times that of the State and local burden.**

**In 1947, Los Angeles County had to pay an estimated $1,429,000,000 as its share of running the Federal Government, more than six times the value of all farm products in the county. This startling figure was reached by prorating the total Federal budget of $39,608,000,000 (after refunds) to the State of California on the basis of the state's percentage of income payments, and then prorating Los Angeles county's share on the basis of the county's percentage of retail sales within the state.**

The Holly refinery pumps waste water first into a settling tank and then into a clarifier, thence to a series of settling ponds for further oxidation. After the maximum amount of sludge has been taken out, the water is pumped out onto the near-by marsh land. This does not waste the water, because by irrigation of this pasture land with fresh water, salt from underlying sea water is kept from surfacing. It is also used frequently by sportsmen to fill their duck ponds. Irrigation with this water by the Alvarado refinery has resulted in the reclamation of many acres of valuable land.

# Pallet System a Design Factor In Planning Modern Plant

By W. R. POSTLEWAITE
Engineer
Standard Oil Company of California

GENERALLY speaking, the now conventional pallet system has the widest application in material handling, and the pallet and its accessory trucking equipment consequently has come to be one of the essential factors in plant storage layout. Following the standardization of a suitable pallet size for the operation, separate studies should be made to determine stable load piling patterns for the packages or other objects to be palletized, permissible stacking heights as limited by the crushing resistance of the lower course, the resulting unit loads on the warehouse floor, and safe practices in handling at high elevations.

Where a new building is being designed, the ceiling clearance above the palletized stacks of material should allow adequate space for fire fighting. Since the pallet system is most efficient with high piling, the ceiling height should be 18 to 20 feet or so, at least on the first floor. The pallet not only affects the vertical height between floors, but also determines certain essential horizontal dimension in the storage portions of the building, including the column spacings.

The clearance space allowed between pallets is an important consideration for several reasons and little information seems to be available to guide the plant designer on this important detail. The gap here, however, must be sized to afford the necessary working clearance in practical fork truck maneuvers, since too close a spacing would demand excessive care in placement and withdrawal of loads, and so would waste valuable time. Too close a spacing may also result in damage to the goods, due to misjudgment on the part of even experienced truck drivers.

### Avoid Bottlenecks

However, allowing extra space between pallets for speed in removal from the pile is of no avail if there is a bottleneck elsewhere in the circuit which prevents utilizing the time saved. An elevator for example, as previously mentioned, is frequently a bottleneck of this kind. Furthermore, the floor space economy which results from close pallet stacking, although relatively small, may frequently be worth more than the handling time saved by a more liberal spacing.

There is also the factor of main aisle width as affected by side clearance between adjacent stacks of pallets. Sufficient side clearance between pallets would permit the truck operator to start to swing the load considerably ahead of its complete straight withdrawal, and the main working aisle could be decreased accordingly. Three to four inches between pallets is considered a reasonable clearance for many operations, but to actually realize and maintain this spacing permanent floor paint striping is usually required when deep stacks are involved.

### Side Clearance Is Vital

The newly developed fork truck load side shifter, which enables the operator to quickly move the forks laterally about three inches either way to correct for misjudgment in the truck approach to the stack, promises to assist in this matter and save floor space. In any event the side clearance must include proper allowance for overhanging loads. The size of the pallet, together with its side clearance, then should be a deciding factor in laying out the building column spacings in both directions and the column locations may in turn have to be adjusted in reaching a compromise which affords an economical building design as well as a good storage floor pattern.

General arrangement of warehouse aisling, and the blocking out of the areas to be occupied by pallets, deserves careful attention, particularly when there are a large number of items to be stored, all of which must have ready accessibility.

In the type of wholesale storehouses used for rapidly dispersing a great variety of items, which may range from 900 to 2,500 or more different commodities, as is common in such wholesale businesses, as drugs, groceries, paints, and also in certain oil businesses, the entire warehouse or plant arrangement is designed around the specialized materials handling plan which must be devised to suit each case. The progressive assembly of orders, involving both large and small quantities of many items can require a very detailed analysis in arriving at the optimum operating plan and the resulting floor layout.

The limitation of the relatively short horizontal distance over which fork trucks are most effective, since they are primarily complicated and heavy tiering machines, leads to consideration of consolidated picking zones where at least one pallet of each item is stocked so as to minimize the round trip distance traversed. However, there are complications here when packaged commodities as large as half and full size barrels, weighing 250 to 500 pounds, are to be manually handled individually off the pallet, and also when barrels are palletized and stored one above the other on multiple deck support frames so as to further consolidate the picking zone, and utilize the cubage space above the first course.

Picking off a fraction of a pallet load comprised of four 450-lb. barrels, for example, here means forking the pallet down into the aisle, making the appropriate manual transfer onto another pallet at floor level, and then replacing the stock pallet by fork truck to the shelf or stack. It usually would be prohibitively wasteful of floor space to make the aisles sufficiently wide to accommodate both a trailer train and the fork truck so they could operate together as a team. This, however, is but a limitation of present models of fork trucks and may be overcome in the future by the development of a practical design of disappearing, or backwardly retractable, forks.

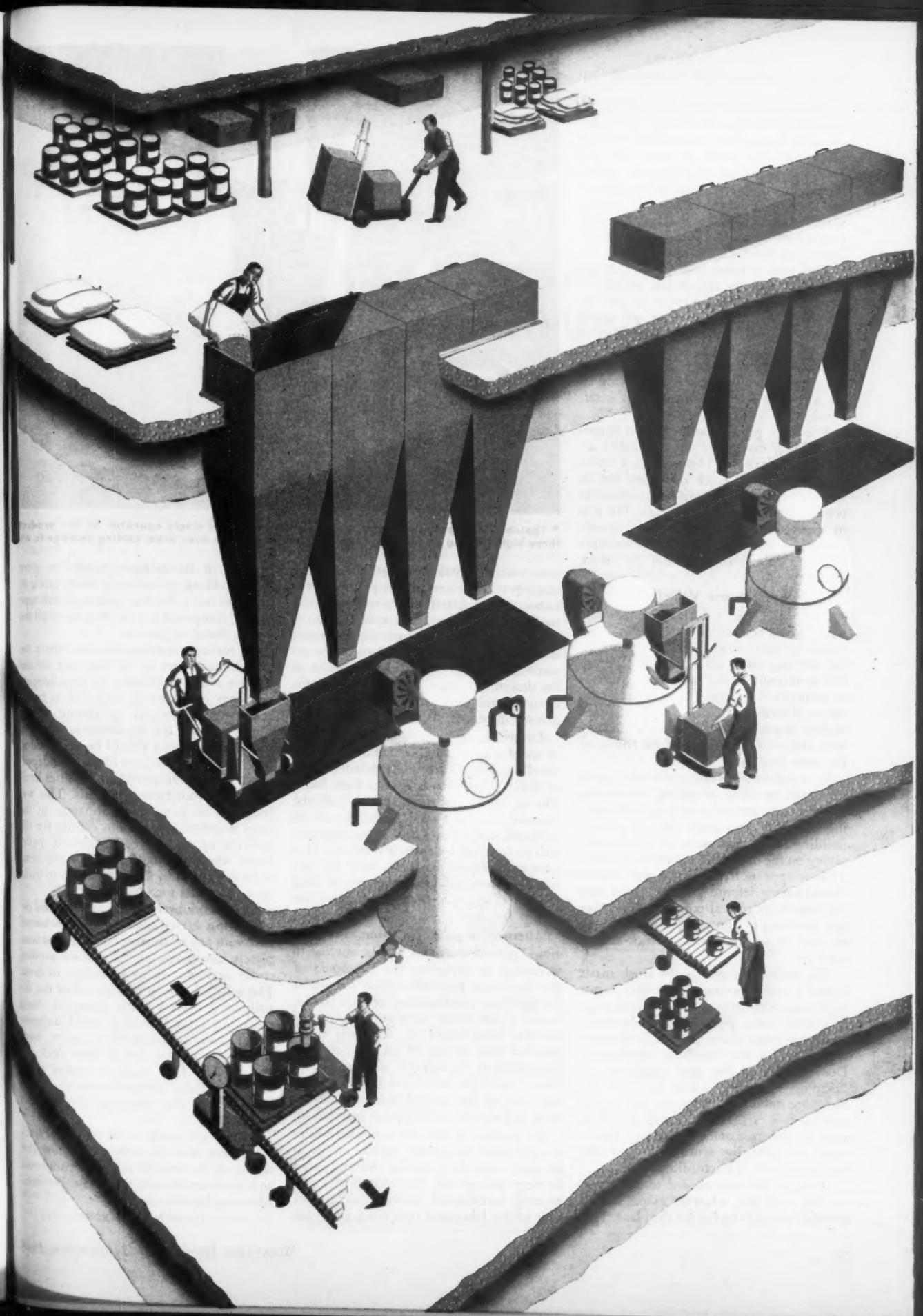
### Workable Solution

A present workable solution to this aisle problem, and which affects the warehouse layout, has been to provide a so-called "central station" loading area located at about the midpoint in the main large storage area, and to use tractor trailer trains to deliver palletized incoming stocks to this point from which they are dispersed in full pallet quantities into the storage

*(Continued on page 52)*

**Wherever materials are to be handled, there some business organization is either making or losing money, perhaps an amount large enough to mean the difference between profit or loss on the entire operations of the company. For that reason, "Western Industry" provides a continuous editorial service to its readers on materials handling developments and problems. The accompanying article is another of "Western Industry's" regular features on handling of materials.**

**• Cutaway (right) shows three floors at Richmond grease plant. Raw products (except oil) enter third-floor bins, drop to second-floor hoppers, via lift trucks to mixers, and on to first floor for packaging.** *(Courtesy The Standard Oiler)*



(Continued on page 89)

blocks according to type, by means of fork trucks.

Outbound stocks would undergo the reverse flow, but then the fork trucks would circulate through the surrounding picking aisles, assemble orders in both full and fractional pallet lots, and load the trailers then destined for long hauls to the railroad car loading or other docks. The tractors would shuttle between the two terminal points without waiting for loading and unloading of the trailer trains.

This plan is feasible if sufficient trains are provided so the tractor can, on the delivery of a loaded train, pick up and return with a string of five or six empty trailers. Thus the long round-trip haul is accomplished by the warehouse vehicles most suited to this type of movement and the fundamental principle of carrying as big a load as possible on each trip is satisfied.

The stock piling plan in certain shapes of building may make the 45° pallet arrangement feasible. This affords a somewhat more rapid truck operation but in most instances the 90° layout arrangement is more economical of floor space. The loss of space along the walls, however, usually constitutes a severe penalty which warrants resorting to the conventional 90° stock plan.

### Warehouse Vehicles

The warehouse vehicles selected may have a direct bearing on the layout of large plants or warehouses, since the width of the working aisles must be sized to properly accommodate the equipment which is to maneuver in them. There are now pertinent differences in the over-all net aisle widths required for right angle stacking with the various makes of fork trucks of the same load rating.

In installations where there may easily be a mile or more of aisling, the saving of eight to 12 inches on the practical working width of the aisles can, at present building costs, represent an investment saving on the order of $25,000 to $35,000. Thus it appears that compact fork trucks should have a definite advantage since they can contribute to real economies in either new building design or old building utility, and so justify a higher truck cost if need be.

The over-all height of the truck masts in the lowered position is another factor to be taken into account by the layout engineer since doors, pipes, or other overhead structures must allow proper head room clearance for the handling equipment. Door height is also very significant in planning operations where high lift vehicles are intended to pass into and out of railroad box cars. Here the mast height as well as the rear outside turning radius must be carefully scrutinized and the equipment selected accordingly.

Sizing of the area needed to accommodate the truck fleet, when not in use, should be investigated in laying out the plant. This area usually contains the battery charging machines and servicing equipment for either gas or battery powered industrial trucks. Most of the space would be occupied by the trucks. The number of trucks involved, of course, would have to be arrived at first and this is also pertinent in the design of certain plants where a traffic analysis must be made to avoid traffic congestion in certain aisles and arterials.

**• Typical use of palletized load and fork truck enable a single operator to tier product three high, tripling amount of goods warehoused on same floor area, cutting damage to nil.**

Determination of the quantity and kind of warehouse vehicles needed for the plant usually will mean making a detailed study of the flow of materials on a time basis. The quantities and the nature of both the inbound and outbound traffic should be analyzed, and usually these two categories will be found to be entirely different. Due allowance should be made here for any sustained seasonal peaks that are of long enough duration to warrant affecting the size of the fleet.

Alternate plans of operation, using various types of machines, can be studied to advantage in exploring the economics of the equipment problem, and in arriving at the optimum combinations of fork trucks, tractor trailer trains, hand guided powered stackers, hand trucks, etc. This may entail detailed time studies of all the pertinent maneuvers of the vehicles and the evaluation of both the initial and annual operating costs of the several plans before the most appropriate alternate can be selected.

An analysis of this sort is needed where a substantial equipment investment is to be made, and the results of the study may be very unexpected. For example, a case recently investigated showed that 70 per cent of the labor and fork truck time, for a group of 10 machines, would be spent in assembling pallet loads from stock in less than full pallet lots, although this type of load comprised but 30 per cent of all the pallets handled per day.

To realize efficient operation, where the vehicle runs were to be long and the deliveries at the palletizing or depalletizing end were consequently expected to be intermittent or irregular in timing, it was concluded that the depalletizing crews at the terminal points should be equipped so they could operate steadily and independently of the transportation facilities hauling to or from those terminals. This was found to be particularly apparent in the large warehouse operations calling for the delivery of picked or assembled pallet loads, where the multiplicity of the items to be assembled by the fork trucks to make up a full pallet load, varied widely.

Team work between the hauling and depalletizing crews could not be achieved here with any reasonable balance, and completely divorcing the two crews avoided costly and objectionable delays to both. The solution was to provide all of the depalletizing crews with powered hand trucks or stackers so they could independently handle accumulated pallet loads into or out of box cars at their dock terminals. The fork truck or trailer trains hauling to these terminals were also thereby freed of any delays at the terminal points.

Almost any study of the industrial truck equipment and its traffic will show that timing of the operations is the paramount and deciding element if efficient performance is to be attained.

(Continued on page 89)

NEW PRODUCTION TECHNIQUES

# Castings in Light Metals Save Time and Weight

By E. B. PARKER
Director of Industrial Services
State College of Washington

IN DESIGNING parts to be cast in the light metals, extra precautions should be taken to eliminate such stress raising conditions as sharp interior corners, notches, or abrupt changes in wall thickness. Transitions should be gradual and fillets should be generous but without a tendency to encourage hot spots in the casting. Heavy sections should be avoided where possible. In fact all those engineering features consistent with good design in steel castings, but which are too often neglected, must be religiously adhered to if good light metal castings are to be obtained.

When comparing aluminum and magnesium castings, one can only speak in generalities unless attention is directed to specific alloys. Their ultimate strengths are comparable with a slight edge in favor of aluminum on a unit area basis which is more pronounced in comparing their yield strengths. Considering their endurance limits, both are moderate with some advantages in favor of magnesium. Endurance strengths reach values of 10,000 lbs./sq.in. for aluminum alloys and 14,000 lbs./sq.in. for magnesium.

All things considered and on a unit area basis, magnesium is a closely competing casting material, suffering by direct comparison with aluminum principally in yield strength and stiffness. On a weight basis magnesium may be classed as superior in many respects.

The accompanying drawing and tables portray these characteristics to good advantage.

In the drawing, a cast iron bar ¼"x½" is loaded as a cantilever beam to a theoretical stress of 15,000 pounds per square inch giving a certain deflection at the end. To make the demonstration more convincing, a similar mild steel bar of the same cross section and approximate weight is loaded to have the same deflection as the cast iron member. The resulting theoretical stress in the steel bar is 30,000 pounds per square inch.

The affirmative team in this silent debate is made up of bars of cast aluminum and cast magnesium alloys. These bars are proportioned so that each has the same weight and the same thickness to width ratio as the heavy metal opponents. All beams are so loaded as to have the same theoretical deflection at the end. The accompanying tables show the results of this experiment.

Use of light metal forgings is good practice and enables the engineer to get maximum physical properties from the material. Usually a saving in weight over castings of the same part may be attained, due principally to a higher design stress permissible because of the greater homogeneity of the forged material. Where this method of fabrication is justified the design of forgings should be such as to minimize stress raising features and to facilitate proper flow of the metal.

Aluminum and magnesium may be forged with much the same equipment as is used for steel but the lower forging temperatures are less destructive of dies and longer die life results. Hydraulic presses are preferable to impact machines, as the displacement of the metal is slower and less violent. Forging temperatures are low, about 650 degrees F. for magnesium and slightly higher for aluminum. Magnesium forging dies must be maintained at approximate forging temperature by the use of external heat for best results.

Drawn and formed items may be fabricated from these metals with good results. Aluminum in particular lends itself to these procedures. The degree to which drawing and forming may be carried out depends upon the alloy and temper of the material.

Due to the hexagonal crystal structure of magnesium alloys, they have a limited capacity for being formed at room tem-

Table I

**BEAMS OF EQUAL WEIGHT AND MOMENT ARM**

| *Material* | *Beam size* | *Beam Loading* | *Ratio of Loads* | *Resultant Theoretical Strength* | *Per Cent of Elastic Strength* | *Per Cent of Fatigue Strength* |
|---|---|---|---|---|---|---|
| Cast Iron | .25"x .5" | 4.8 lbs. | 1 | 15,000 lbs./sq.in. | ..... | ..... |
| Mild Steel | .25"x .5" | 9.7 lbs. | 2 | 30,000 lbs./sq.in. | 100% | 100% |
| Cast Aluminum* | .40"x .84" | 22.0 lbs. | 4½ | 16,000 lbs./sq.in. | 66% | 250% |
| Cast Magnesium* | .5" x1.0" | 33.7 lbs. | 7 | 13,000 lbs./sq.in. | 93% | 93% |

*—Solution heat treated but not aged.
**—Values indicated are only approximate.

Loading the aluminum and magnesium beams to the same amount indicated for the steel beam, the interesting facts listed in Table II are brought to light.

Table II

**BEAMS OF EQUAL WEIGHT, MOMENT ARM AND LOADINGS**

| *Material* | *Beam Size* | *Loading* | *Deflection* | *Per Cent of Steel Beam Deflection* | *Theoretical Stress* | *Per Cent of Elastic Strength* | *Per Cent of Fatigue Strength* |
|---|---|---|---|---|---|---|---|
| Mild Steel | ¼"x½" | 9.7 lbs. | .68" | 100% | 30,000 lbs./sq.in. | 100% | 100% |
| Aluminum | .4"x .8" | 9.7 lbs. | .310" | 45% | 7,300 lbs./sq.in. | 30% | 110% |
| Magnesium | .5"x 1.0" | 9.7 lbs. | .196" | 28.8% | 3,700 lbs./sq.in. | 26% | 28% |

peratures, taking only simple bends and shallow draws in this state without intermediate annealing. On the other hand, when the blanks are preheated to approximately 600 degrees F. and when heated dies are used, cups may be drawn to a depth of 1½ times their diameter in a single draw. Thus, what at first glance appears to be a disadvantage often results in savings in reduced die casts.

Both materials may be readily formed by spinning, but here again preheating of magnesium stock is desired except for small deformations. In all forming operations on magnesium all tools and dies should be well finished. In laying out sheet magnesium, scribes should not be used. This precaution is necessary due to the extreme sensitivity of the material to notch effects.

Much is heard of the susceptibility of magnesium, in particular, to corrosion. Under adverse conditions either aluminum or magnesium may be seriously attacked, but troubles from this source are much over-emphasized. Corrosion has been with us always and its destructive effects are not limited to the light metals.

Evidence accumulated over a period of years shows if a properly chosen light metal alloy is given reasonable surface treatment it will withstand corrosion resulting from normal usage as well or better than other construction materials. There are numerous surface treatments in use to meet the various requirements.

By far the most insidious attack to be guarded against by the engineer is galvanic corrosion. Magnesium and aluminum both stand so high in the electromotive series that they are susceptible to this kind of attack when in electrical contact with a dissimilar metal through a conducting solution.

For this reason all points of physical contact between them and the heavy metals should be insulated when in the presence of moisture. Faying surfaces may be painted with zinc chromate primer before assembly and care should be exercised to avoid pockets that may collect moisture. Good drainage and ventilation will do much to minimize trouble from this source. Under dry conditions or where normal operation encourages oil coated surfaces, special precautions need not be taken.

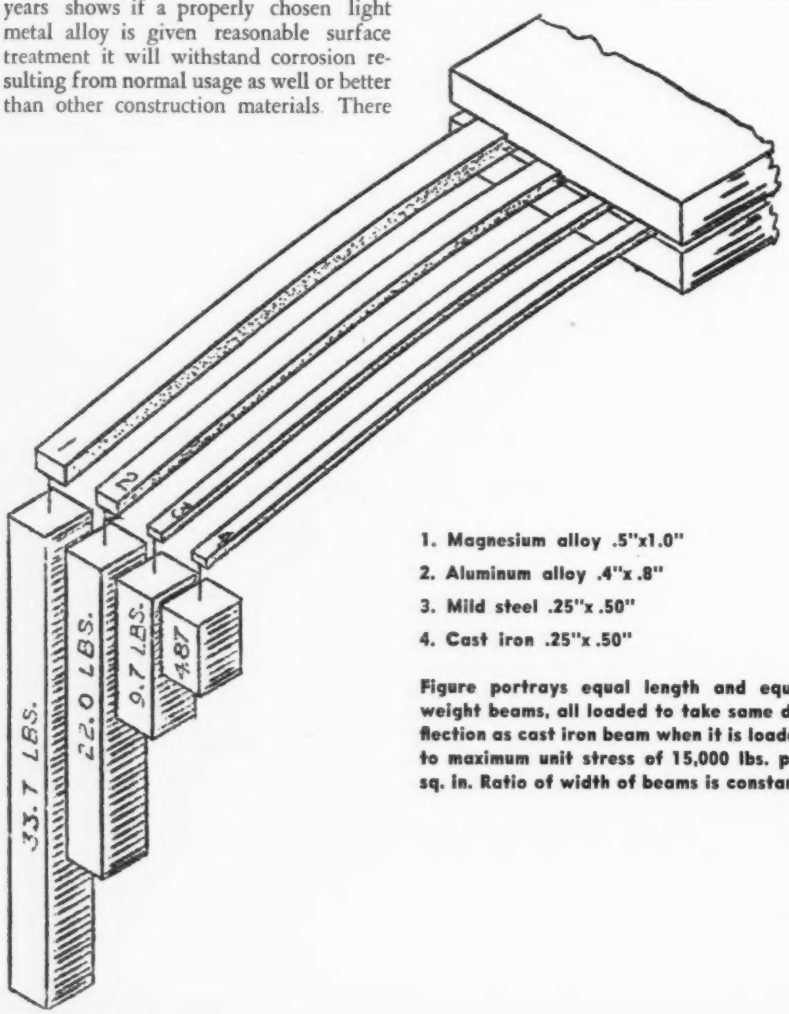
Aluminum bolts and rivets should be the rule where possible. Nails if used should be galvanized and heavy metal bushings or fastenings should be insulated from direct contact in the best way possible. Galvanizing or cadmium plating of steel bolts is helpful though not a positive protection.

Fastenings and connections may be made by all of the commercial methods such as bolts, rivets and welded joints. Where heavy metal bolts must be used, insulating washers or other precautions applying to prevention of corrosion outlined above should be applied. Where tapped holes are required, coarse threads should be used and the depth of threaded holes should be deeper than with steel or cast iron. Bosses should be thicker but carefully blended into the thinner wall sections of cast members. Patented steel thread inserts are often used and cast in or threaded inserts are good for the more severe requirements.

Both aluminum and magnesium may be welded by all of the conventional methods. Heat treated alloys, however, sacrifice their heat treat properties at the welded section and as a result the welding of high strength aluminum alloys is not common practice. Riveting is used mostly for those fabrications. For small welded assemblies subsequent heat treatment may overcome this disadvantage.

In summing up the points to be emphasized from an engineering standpoint, certain facts should stand in bold relief. High strength rolled and extruded light metal sections have much to offer in the way of strength per pound of weight.

Light metals in the form of castings are more than weight savers. They are real utility casting material and as engineers become more familiar with their use they will recognize that savings made in the removal of gates and risers, in clean-up, machining, and in handling will often more than pay for differences in material cost and foundry expense.




1. Magnesium alloy .5"x1.0"
2. Aluminum alloy .4"x .8"
3. Mild steel .25"x .50"
4. Cast iron .25"x .50"

**Figure portrays equal length and equal weight beams, all loaded to take same deflection as cast iron beam when it is loaded to maximum unit stress of 15,000 lbs. per sq. in. Ratio of width of beams is constant.**

## Sinking of Shafts By Core Drilling

SINKING of shafts by core drilling methods promises to result in development of rapid and cheap methods for exploration, development, ventilation and escapeway engineering, according to the California State Division of Mines. Solid cores of rock up to five feet in length and weighing many tons can be extracted by this method.

At the Santa Cruz Portland Cement Company limestone quarry at Davenport, the drill hole is three feet in diameter.

Standard oil well derrick and surface equipment is used to drive a large cylindrical cutting bit and core barrel. Fine hard steel shot is fed to the lower edge of the steel bit, which is rapidly rotated. On the Davenport job, the drilled shaft stands open with smooth, clean walls, even though the rock is so broken that cave-ins would have resulted if standard shaft sinking methods with close-timbering, lagging, etc., had been used.

# Financial and Managerial Controls Shift Westward

By CARROL M. SHANKS
President, Prudential Insurance Company

I BELIEVE the development of the Western region in the next few decades is going to be spectacular, and I am backing my belief by the establishment of an autonomous regional home office on the Pacific Coast. We think this is a forward-looking step to put us ahead of those who have not had this realization.

The main reasons for my belief about the West are the following:

1. The people of the east and the nation have discovered, or re-discovered, the West. They have reawakened to its vast potentialities. They believe the West is going to grow almost incredibly; they consider it a place where men are free in their ideas and open in their outlook and progressive in practice. And an amazing number want to live on the Coast; the importance of this number cannot be over-estimated, as far as its effect on the West Coast is concerned. Top executives of many of the eastern companies will want to live and carry on in the vital atmosphere of the West. It will not be a case of running an eastern concern by remote control from the West — communications and transportation have seen to that.

2. The importance of the population growth of the last eight years, so far in excess of the rest of the nation—8½ per cent for over eight years for the rest of the nation, but over 40 per cent for the Coast and over 33 per cent for the entire eleven Western states — is that for the first time the Western population has risen to a point where, in numerous instances, it will support the minimum sales necessary for additional efficient low-cost mass production industries in the West, which will have to rely on no other markets but the West. Furthermore, it will support the opening of regional units of mass production industries, and the effect of this, due to the reconstruction and the breaking down of the basing-point system, cannot be over-estimated.

3. The growth of scientific knowledge for the last decade has greater significance for the West, I believe, than for any other area, excepting only the Texas southwest. New industries, new chemicals, new metals, new processes — many of these are specifically adapted to the resources of the West; many are particularly adapted to the type of chemicals, metals and minerals which are extracted from the relatively dry lands of the intermountain areas. None of these have roots in the older areas and the manufacturing plants for them are not there. They can be built here as well as elsewhere, especially now that there is an adequate population base over which to spread the cost of different handling of water.

Countless scientific developments will bear directly on the West; new chemicals and new metals, such things as direct uses of the sun's energy, weather control, rainmaking devices, use of converted ocean water for irrigation, domestic and industrial purposes — most of us will live to see that commercially feasible in this area— use of seafood plants and minerals for fertilizers, and such simple advances as those taking place every day, such as the packaging of food to keep it fresh for longer periods of time.

I was a law clerk and a young lawyer in the '20s, and worked on many of the consolidations and mergers of that period. Always there followed an increased concentration of power, authority, direction and control in one spot, and very often a lowering of initiative, drive and managerial ability of those who were running the units of the companies that were put together.

The growth of the West will take place to a large degree through local Western business concerns, relatively small businesses. High taxes necessitated by our international and domestic commitments apparently cannot be substantially cut very soon, but I believe that the West in the meantime has a special interest in trying to make it easier for small businesses to start and develop.

Much of the development, however, will be by local regional units of national industries. The trend, I think will be toward making these units autonomous. We believe in the Prudential that the most efficient and effective way for a national concern to carry on in a region such as this is through autonomous units. But it must be real autonomy. The local man must have real authority to handle the local business and to take care of local matters.

A regional unit is closer to the markets. If it has real autonomy, it will be able to develop those markets from the local point of view. People have different tastes, habits and needs; the regions have different seasons, they talk different, they act different and they certainly need local attention to local problems. A regional business cannot rely on a national volume, and you can see whether it is making its way on its own.

Most important of all, an autonomous regional unit gives one more center of drive and initiative for your executives. The lack of this drive is the fatal weakness of the Russian system. The lack of a center of drive and initiative can also be a vital weakness for big business, and it can be corrected by having more regional autonomous units.

The intermountain states are oriented to the West, not to the east, although this was not 100 per cent true 10 years ago. The great population growth has attracted their trade and interest like a magnet; they are now definitely part of the West.

Development of the entire region as a

*(Continued on page 56)*

### ALL-WESTERN CONFERENCE

**To promote unified "eleven Western states thinking" on the economic and industrial problems confronting the West, rather than localized viewpoints, the Western States Council at its board meeting in Seattle, September 18, appointed a committee to lay plans for an all-Western conference of industrial development.**

**Business and industry should attack these problems directly, instead of leaving the job to state and federal government officials, says President Gus Backman of the Council.**

**Membership of the committee is composed of the four following chamber of commerce managers: Floyd Hagie, Seattle; Arthur Farmer, Portland; Louis Fox, San Francisco; Harold Wright, Los Angeles, with A. C. Prendergast, editor of *Western Industry*, chairman.**

(Continued from page 55)

unit and not as isolated states offers a great challenge to our leaders and a rich reward to the West and the nation. Business, I am quite sure, thinks more and more of these eleven Western states as one big region, one big trade area. Certainly your common problems and common interests are greater than your differences. Certainly the problems of the water and power resources of this region call for a unified viewpoint and a joint long-range program which will cover the whole area, and on a scale vast enough to cope with the water and power resources and add to the nation's wealth.

This Western region had a population gain between 1940 and 1948 of over 33 per cent, but the proportion of new land under water is only around 6 per cent. This is not enough. The increased farm output starts a chain reaction of more canning, packing, machinery, more services—financial, investment and all types. This development calls for a lot of capital, which will be available from the older areas.

The Prudential, and no doubt many of her sister companies, is investing $15,000,000 to $16,000,000 a month in this region. We receive in premiums about $7,000,000 or $8,000,000 a month, and we pay out the usual taxes. So we are investing more than $2 for each dollar that we take out of here. New and developing regions attract and need capital. In later years, when your economy is more mature here, the capital will flow from the West into newer areas. The West in turn will supply capital.

Despite the fact that the outlook in the Orient is very black at present, the Orient is waking from years of colonial domination. Some day some of these nations will be ready for trade with the United States; other nations will be there for us to reclaim from Communism. Either way, the West is in the front lines.

## New Research Program for USC

A new program of research and project engineering on land, at sea, and in the air involves coordination of facilities of the Allan Hancock Foundation for Scientific Research, established on the main campus of the University of Southern California in 1939; U.S.C. College of Aeronautics on Hancock Field in Santa Maria which was established in 1928 and the new U.S.C. Marine Laboratory ship, the Velero IV, launched last April.

Personnel and equipment of the three institutions, of which Capt. Allan Hancock is director, will be joined in a broad program of work on exploratory, fundamental and developmental research projects for governmental and industrial organizations.

## Possible Industry For Montana

Developments for Montana that could be stimulated were reported at a recent state-wide meeting at Great Falls by G. J. Skibbins, industrial consultant for the state chamber of commerce as follows:

A series of warehouses for storing supplies to meet the needs of Alaska and the north.

Standby assembly plants for assembling aircraft and heavy equipment at a point near where it might be placed in operation.

Air force depots to do checkups, overhauls and other maintenance work to eliminate sending equipment to the east for such work.

Establishment of military training bases.

Synthetic fuel manufacturing plants and facilities for the storage of oil and gas to serve the needs of the north and the West Coast. It was pointed out that Montana is at the apex of the entire producing area of such products.

Means for the stockpiling of mineral resources.

Wool processing developments and the manufacture of wool clothing through the development of government contracts.

A pulp and paper industry.

Farm machinery plants which are easily convertable into war plants should the need arise.

A food processing industry.

## Small Manufacturers Form Own Association

"Western Manufacturers, Associated" is the name of a recently organized nonprofit group of 20 smaller manufacturers in the Los Angeles area who have banded together to increase efficiency. Martin Lovequist of Lovequist Engineering Co. is president; Norman Lynn of Lynn-Western, Inc., is secretary, and treasurer is W. R. Emick of Walton Tool and Die Co. Ten plants are represented on the board of directors.

Now in its second month of operation, the office of the association acts as a clearing house for members' plants for exchange of information, interchange of work and opportunities. Members represent 20 different sub-contract manufacturing categories, and within the organization are complete facilities for design and production. Current program also provides sales representation for member firms. Affiliation of the plants affords those seeking production facilities with a central contact for numerous and varied requirements, and members have access to specialists in engineering design, tool planning and design, industrial engineering, and sales methods. Headquarters have been established at 1452 N. Seward St., Los Angeles.

## WESTERN INORGANIC CHEMICAL PRODUCTION UP

**Production of inorganic chemicals in the eleven Western states in 1947 shows a decided increase over 1946. Biggest increase was in sulphuric acid which jumped from 588,336 short tons in 1946 to 749,252 short tons in 1947, a gain of 160,916. Only chemical to show a decrease was liquid and gas carbon dioxide.**

| ITEM | Number of Producing Plants 1946 | 1947 | Unit of Measure | 11 Western States Production 1947 [1] | 11 Western States Production 1946 | Difference in Western Production 1946-1947 | % of Diff. | National Production 1947 | Western States % of Nat'l Prod. | National Production 1946 | Western States % of Nat'l Prod. | Difference in Western States % 1946-47 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon Dioxide—Liquid & Gas | 11 | 11 | M. lbs. | 11,466 | 12,361 | —895 | —7.2 | 243,880 | 4.7 | 217,241 | 5.7 | —1.0 |
| Carbon Dioxide—Solid | 14 | 14 | M. lbs. | 135,589 | 112,522 | 23,067 | 20.5 | 723,165 | 17.4 | 644,699 | 17.4 | ..... |
| Chlorine | 5 | 7 | Short Tons | 159,526 | 121,789 | 37,737 | 31.0 | 1,446,865 | 11.0 | 1,165,126 | 10.4 | * .6 |
| Hydrogen | 13 | 13 | Mil. cu. ft. | 2,189 | 1,889 | 300 | 15.9 | 21,936 | 10.0 | 17,605 | 10.7 | — .7 |
| Nitric Acid | 6 | 6 | Short Tons | 57,905 | 50,362 | 7,543 | 15.0 | 1,190,060 | 4.9 | 573,827 | 8.8 | —3.9 |
| Oxygen | 27 | 26 | Mil. cu. ft. | 1,315 | 1,036 | 279 | 26.9 | 13,793 | 9.5 | 10,868 | 9.5 | ..... |
| Soda Ash—Natural | 4 | 5 | Short Tons | 281,132 | 209,411 | 71,721 | 34.2 | 281,132 | 100.0 | 209,411 | 100.0 | ..... |
| Sodium Hydroxide, Electrolytic Liq. | 4 | 7 | Short Tons | 175,545 | 110,383 | 65,162 | 59.0 | 1,634,252 | 10.7 | 1,129,956 | 9.8 | * .9 |
| Sulf'c Acid, Contact & Chamber [2] | 16 | 15 | Short Tons | 749,252 | 588,336 | 160,916 | 27.3 | 10,574,941 | 7.1 | 8,658,555 | 6.8 | * .3 |

[1] States included are: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.
[2] Excludes fortified spent acid.
* Percentage increase.

*Prepared by San Francisco Chamber of Commerce from U. S. Census Reports.*

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*Here are the answers to your customers' questions about radiant panel heating:*

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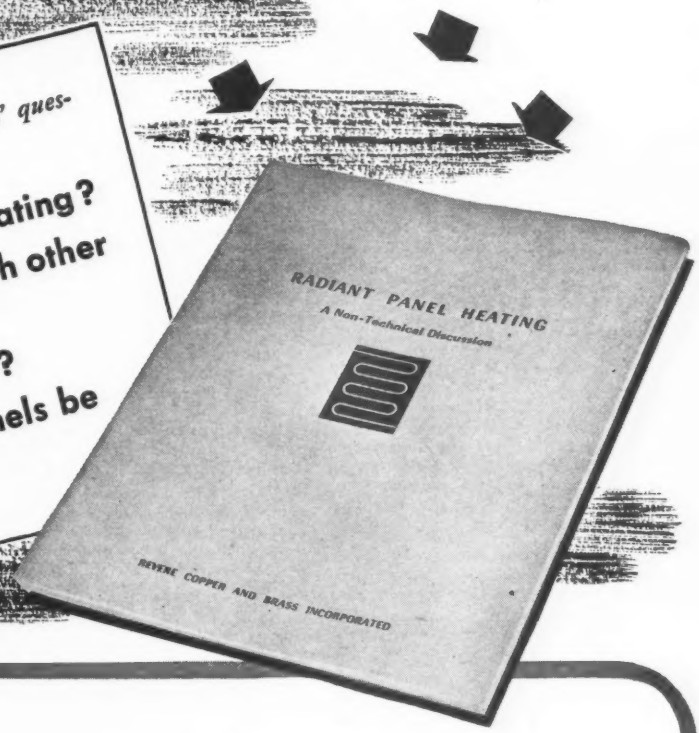
- **How does it compare with other heating systems?**
- **How much does it cost?**
- **Where should the panels be located?**

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**No matter what type of system you install, *trouble always costs more than Revere Copper Water Tube!***

# WESTERNERS AT WORK...

## Arizona

**William P. Crawford** promoted to general superintendent of the Copper Queen Branch, Phelps Dodge Corporation, Bisbee; **William W. Little** upped to mine superintendent at the United Verde branch, Jerome.

Dr. W. A. Simanton

**Dr. William A. Simanton** is the new technical director and assistant to the president of the Agricultural Chemicals Co., Phoenix. A specialist in insecticides, he was senior entomologist for Shell Oil Co., San Francisco.

## California

### Manufacturing

**Galen Butterbaugh** and **Louis C. Vergith** have recently joined the staff of Advance Gear & Machine Corp., Los Angeles. Mr. Butterbaugh comes from Foote Bros. Gear & Machine Co., Chicago; Mr. Vergith, who is named shop foreman, was general shop foreman for Keystone Engineering Co., Los Angeles.

**I. W. Bruce** appointed manager by Metal Masters, San Francisco. He was formerly supervisor of engineering, Pacific Gear & Tool Works.

E. P. Camous

**E. P. Camous** is the new traffic manager for W. P .Fuller & Co., succeeding **N. B. Wagner,** who recently retired after 50 years with Fuller. Mr. Camous has been the assistant traffic manager.

**Tom Kirby,** Atlanta, Ga., named North Pacific division manager for Philco Corporation, with headquarters in San Francisco.

**Charles K. Krolek,** former service engineer in the x-ray division of Westinghouse Electric Corp., San Francisco, has been appointed district manager of the Magnavox Company for the area west of the Rockies. He will head the service office of the Magnavox television organization in San Francisco.

Dr. David M. Gans

**Dr. David M. Gans** is the new director of research for Arco Laboratories, division of Arco Co. of Calif., Ltd., Los Angeles, manufacturers of automotive, industrial and other special coatings. Dr. Gans was at one time on the faculty of the University of Chicago, and came to Arco from Quaker Chemical Products Corp., Conshohocken, Pennsylvania.

Ralph M. Hoffman

**Ralph M. Hoffman,** president of Link-Belt Co., Pacific division, has been elected a vice-president of the parent Link-Belt Co., Chicago, manufacturers of heavy construction equipment.

### Metals

**David D. Baker** is new manager of tungsten operations of the United States Vanadium Corp., with headquarters at Bishop. He will administer both the Bishop and Winnemucca, Nevada, operations of the company.

**J. D. MacKenzie,** general manager of the Western department, American Smelting & Refining Co., San Francisco, promoted to a higher post in the New York offices of the firm. He became vice-president of Federated Metals in 1941, and assumed the general managership in 1946.

### Food

**E. B. Woodworth** has assumed the position of general sales manager of the Hawaiian Pineapple Company, succeeding **Harry E. MacConaughey,** former sales chief and vice-president. The latter is continuing as vice-president in an advisory capacity.

**Forrest J. T. May** elected president of Lucky Stores, Inc., succeeding **Otto P. Meyer,** retired.

**R. H. Tracy,** veteran production manager for Treesweet Products Co., has been elected vice-president in charge of production; **E. J. Draper,** chief chemist, named vice-president in charge of research.

**Donald Nelson,** wartime director of the War Production Board, has accepted appointment as executive vice-president of Mission Pak, world's largest shippers of fancy fruits. Until recently he was president of the Independent Motion Picture Producers.

**O. M. Anwyl** named southern district manager for Golden State Co., Ltd.; **A. E. Schwatka,** Oakland, succeeds Mr. Anwyl as manager of the Telegraph Avenue branch of Golden State in Oakland; **J. F. Jensen,** formerly at Sacramento, replaces Mr. Schwatka as San Francisco manager for the company.

**Clarence E. Miller,** president of A. Schilling & Co., pioneer San Francisco spice and food products firm, has been elected to a vice-presidency in McCormick & Co., Baltimore, with which Schilling merged last year.

### Transportation

**Edward J. Hudson,** general passenger agent, and **William P. Bannister,** labor relations mediator, recently retired from the American President Lines, San Francisco.

**John R. Marra** named vice-president, Western departments, by the Railway Express Agency, with headquarters in San Francisco. He succeeds **Walter Reese,** transferred to Chicago in a similar position with the Central departments. The company has also appointed **A. MacMaster** as acting superintendent of the Los Angeles division in the place of **R. R. Ripley,** on leave of absence.

**Robert S. Hirsch** has been named freight traffic manager for the Santa Fe Railway at Los Angeles, succeeding **Guy L. Goin,** who retired after 41 years with the road. Mr. Hirsch is a former Californian, but for the past seven years has been eastern freight traffic manager for the Santa Fe in New York.

### Aircraft

**William C. Cook,** former superintendent of fabrication for the Douglas Aircraft Co. at Santa Monica, has joined Vic Pastushin Industries, Inc., Los Angeles manufacturers of sheetmetal and extrusion components for the aircraft industry.

### Oil

**W. L. Stewart,** Union Oil Company of California, selected as chairman of a committee on smoke and fumes by the Western Oil & Gas Association. Other committee members include **George A. Davidson,** Standard Oil Co. of California; **David E. Way,** Richfield Oil Corp.; **P. S. Magruder,** General Petroleum Corp.; **Basil O'Connor,** The Texas Company; **F. S. Clulow,** Shell Oil Company; **Herschel Y. Hyde,** Tide Water Associated Oil Co., and **Don B. O'Neill,** Independent Refiners Association.

F. F. Vaughan

**F. F. Vaughan** has been appointed head of the aviation department for General Petroleum Corp., Los Angeles, succeeding **W. D. Ellison,** who has been named engineer builders' field representative for the Socony-Vacuum Oil Co. in the southern California area.

## Idaho

**L. J. Randall** of Wallace is the new controller of the Hecla Mining Company, succeeding the late **Leo J. Hoban.**

**Robert M. Hardy, Jr.,** named office manager and personnel director, Sunshine Mining Co., Kellogg, replacing the late **James Shreve.**

## Oregon

**Robert H. Ripley** has been selected to head a new testing laboratory under construction for the Douglas Fir Plywood Association at Eugene. The plant will begin operations about January 1, and will serve plywood manufacturers in Oregon and California.

**Emmett E. Stoddard,** long associated with the Oregon lumber industry, has joined the staff of West Coast Lumbermen's Association, where he will work on statistical reports.

Three recent appointments by the Hyster Company, Portland manufacturers of industrial equipment, include **Paul Brainard,** named head of a newly created Engineering Standards department; **R. E. Stiegele** to handle special sales assignments for **Philip Hall,** general sales manager; and **William Morrow,** transferred from Hyster's Danville plant to become chief accountant at Portland.

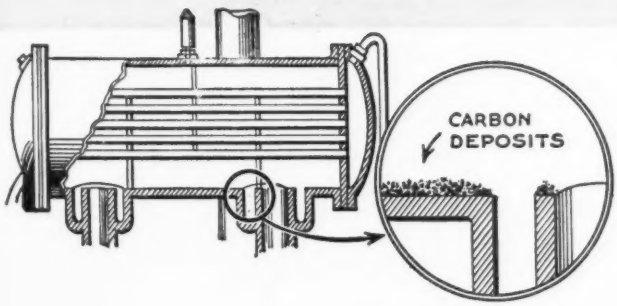
*(Continued on page 73)*

*Shell scientists believe it will pay you to know about*

# SHELL CLAVUS OILS

*(formerly "Shell Compressa Oils")*

## specially developed to step-up compressor efficiency



### *Carbon can shut down your whole operation*

When inferior oils are used in a compressor, excessive carbon deposits clog discharge lines and "insulate" cooler pipes — preventing proper dissipation of heat. As carbon accumulates, it becomes hot enough to ignite oil vapors. The result, if the oil is sufficiently volatile—fire or explosion. And a costly breakdown.

### *To fight carbon*

Shell developed *Shell Clavus Oils* expressly for compressor lubrication. These are refined by a special solvent extraction process . . . are highly oxidation stable. Carbon and "gum" forming materials are negligible . . . Shell Clavus Oils have high and narrow boiling ranges to resist vaporization . . . and good demulsibility to resist washing by moisture.

### *Figure what Shell Clavus Oils can save you*

Shell Clavus Oils can make a compressor more efficient . . . *can cut its cost of operation.* Shell Clavus Oils come in several grades to meet needs varying from low temperature ice machines to multi-stage compressors operating under wet or dry conditions. It will pay you to get complete details — from your Shell Lubrication Engineer.

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**ARE YOU ABSOLUTELY SURE YOU ARE GETTING ALL THAT'S NEW IN LUBRICATION?**

Your Shell Lubrication Engineer can make a complete study and analysis of your plant and machines . . . give you engineering counsel, advice on new lubricants and their application . . . help you set up schedules and controls for each and every machine. For that kind of service — call in your Shell Lubrication Engineer.

# New Fontana Blast Furnace Will Be a Blessing

***Western Freedom From Eastern Sources Seen; Cold-Rolled and Lead Still Short; Employment Boom Expected But Employers Are Choosy; War-Baby Products Said to Hurt State's Reputation***

LOS ANGELES — **The oil industry,** hungry for steel to extend its pipeline networks on four continents, has suddenly become a benefactor, rather than a competitor, to hard-pressed steel users in the West.

Thanks to the pressing need for an 1840-mile gas pipeline linking Texas and New York, the West's second blast furnace will be put in construction at Fontana shortly—a step of tremendous long-range potentialities to the Pacific Coast.

Claude A. Williams, president of Transcontinental Gas Pipe Line Company, proved to be the man with the plan. Armed with a $189,000,000 contract for the pipeline, already authorized by the Federal Power Commission, he *had* to find steel plate in quantities which the steel industry, heavily booked with pipe orders well into 1953, pronounced hopeless. But Williams' need—and ample financing—made him the answer to Henry Kaiser's problem at Fontana.

Kaiser, too, wanted to expand, but the financial complications enmeshing Fontana with its RFC loan made conventional financing virtually out of the question.

A $60,000,000, gilt-edge order for steel plate, however, is an extremely solid bulwark to a company which also is developing at least a 50-year supply of its principal raw material. And a $17,000,000 expenditure to double the West's only blast furnace operation seems as sound an investment as an umbrella on a rainy day. To the West's metal-using industries, the expansion means further freedom from dependence on Eastern mills. Fontana now has six open-hearth furnaces and a seventh under construction. Presumably seven more will be needed, plus enlargement of coking facilities. An operation of this size should attract many subsidiary industries dependent on proximity to a primary source of steel for economical operation.

Perhaps the day may come for rejoicing that the Fontana mill was located, not on tidewater, but in an inland agricultural area where there is plenty of room for industrial expansion.

Scarcities are keeping many local metalworking industries in low gear. Cold-rolled steel is the usual bottleneck, but lead also is in short supply again. Auto makers are operating on a hand-to-mouth basis, frequently keeping production rolling only by chartering planes to fly in necessary parts from the East.

All indications are that this fall will see a decided bulge in the employment market in southern California. Many factors are conspiring to absorb manpower, running the gamut from seasonal increases in garment making and food packing to building activity, which is running 52 per cent above last year's record-making rate.

The fishing industry has suddenly struck it rich after strikes and considerable hardship within the past year. Tuna pack will be 150 per cent greater. The fickle albacore, whose frequent disappearances from southern coastal waters has long been a mystery, has reappeared offshore in numbers about 20 times greater than ordinary.

Migration to southern California continues heavy, but enough workers are being absorbed to keep the labor situation firm. Employers still hire carefully because so many of the newcomers either lack satisfactory experience or else are considered poor risks on account of their precarious grasp upon the housing problem.

If native sons were able to broadcast a message to westbound Easterners, they would certainly advise them to bring with them (a) a top notch record as a machinist, toolmaker, or jet plane engineer; (b) a bonus in the form of a few carloads of scarce raw material, such as sheet steel; or (c) their own house, plus money enough to live without working for the next couple of years.

In another of the periodic reconnoitering trips made by emissaries of the Los Angeles Chamber of Commerce to Eastern trade areas, Domestic Trade Commissioner W. C. Klingborg gleaned a number of valuable—if not entirely flattering—suggestions from buyers of Western-made products in New York, Washington, Philadelphia, Chicago, Detroit, and other key cities from Ohio to Wisconsin.

He found retail trade brisk and sales still increasing. Merchants everywhere have been modernizing their buildings—and reducing inventories. Nearly 85 per cent of them, in fact, report lower inventories than a year ago—a trend based on (1) close-out of slow-moving and unwanted lines, (2) careful restocking with goods of better quality and value for the money, and (3) improved deliveries from the factory, making it unnecessary to order in such large quantities.

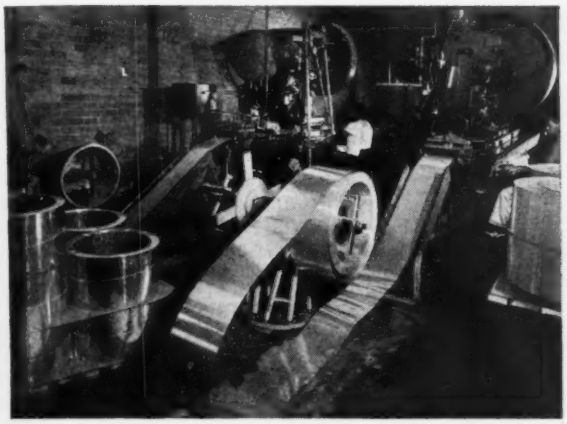
Reputation of southern California-made products has been tarnished by the activities of many manufacturers who flooded the postwar market with shoddy goods. Now the chickens are coming home to roost. Retailers who have tried to get adjustments on inferior merchandise have frequently found the maker no longer in business.

Amateurish efforts by many members of the West's huge freshman class of war-plant convertees thus have made a good many skeptics. These buyers are still in the market, but they will have to be shown products of unmistakable merit before they can be induced to buy extensively again. They also will have to be convinced that the manufacturer is here to stay—and is willing to stand behind his product.

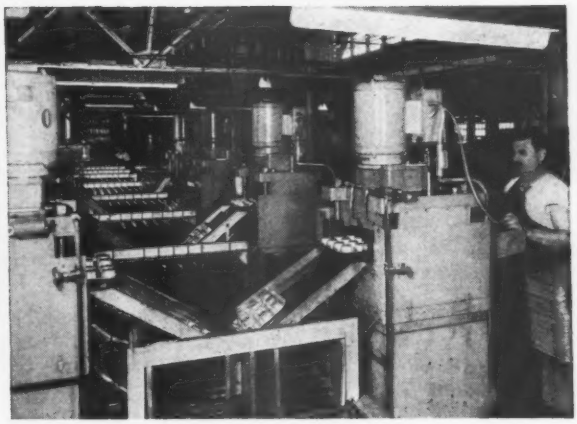
Klingborg discovered that some Western firms apparently are making the same marketing mistakes often committed by Eastern firms entering Western markets. They are trying to cover the entire East through outlets in Chicago and New York, not realizing that this does not assure them proper distribution in Detroit, Philadelphia, Cincinnati, and other prosperous buying areas. To meet competition they

*(Continued on page 62)*

# SPUN FROM A BLANK IN 9 SECONDS!



**THE LIGHT WEIGHT** muffin pan at the top is *seamless*. It's the "Muffin-aire," and it's made by United Aircraft Products, Inc., Dayton, this way: Mill coils of the proper alloy of Kaiser Aluminum are automatically fed into 50 ton presses. In one quick operation the aluminum is blanked to size, flanged, and stamped with trade name and patent numbers. At this point it is ready for the spinning of the cups.



**COLD BLANKS** are placed in these special spinning presses and finished pans are automatically ejected *in from 6 to 9 seconds!* In that brief period 12 uniform cups have been *spun* to make a muffin pan that's strong, rustproof, and an excellent heat conductor. By conventional methods it would have been necessary to draw each cup separately, then attach them individually to the pierced blank.

Like United Aircraft Products, Inc., *you* can lower fabricating costs with the proper alloy of Kaiser Aluminum.

You can save manufacturing steps and handling costs because of its consistent high quality and workability. You can cut scrap losses, too. And you can obtain a lasting, bright finish by merely buffing!

You'll have a product that has eye-appeal, *sell*-appeal. That can't rust, warp, chip, crack. That's light, durable.

For *your* most difficult fabricating problems, call in a Permanente engineer. He can help you select the right alloy of the *versatile* metal—Kaiser Aluminum!

**For another dependable source . . . choose**

# Kaiser Aluminum

**product of Permanente Metals Corp.**

SOLD BY PERMANENTE PRODUCTS COMPANY, KAISER BUILDING, OAKLAND 12, CALIFORNIA . . . WITH OFFICES IN:
Atlanta • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee
Minneapolis • New York • Oakland • Philadelphia • Portland, Ore. • Salt Lake City • Seattle • Spokane • St. Louis • Wichita

*(Continued from page 60)*

will have to get better representation and give customers the same attention being paid by manufacturers closer at hand.

Recent freight rate increases on west-to-east traffic have put West Coast producers of some lines at a disadvantage. Klingborg suggests that "warehousing your products in the territory may be the answer—that is, if you're not prepared to make freight allowances."

These findings generally add up to the conclusion that many Western manufacturers may be trying to "get too big too fast." Klingborg implies that in some cases they should (1) concentrate their fire on a few selected areas that they know they can service properly, instead of trying a buckshot coverage of the entire East; (2) make careful studies of price and shipping costs, to determine whether they can successfully meet rising competition in Eastern manufacturers' home territories; and (3) take another look at their product to see if it can meet the requirements of buyers who no longer need to put up with second-rate and "ersatz" commodities.

Not all the comments, of course, were unfavorable. Klingborg found the East and Middle West to be excellent prospects for golf and tennis goods, rubber specialties, and other sports equipment; for building specialties, woodenware, items such as trays, salad bowls, and plates of Western design in Western woods; for distinctively styled Western furniture—*if* well made and definitely not the "borax" type of cheap article, which has drawn much of the ire of buyers; and for automotive supplies such as fog lights, extension pipes, filter systems, and other accessories and parts of good quality.

One of the best signs he encountered was recognition of the excellent dealer help given by some Western manufacturers in following through with suggestions, selling helps, and promotional tie-ins. These aggressive merchandising ideas, plus a fondness for experimenting with new designs in search of better, more attractive products, may mean Western manufacturers may well take the lead in many fields—but only if they avoid overpricing and give their dealers the service and cooperation they deserve.

Gradual increases in activity at local aircraft plants continues, with unemployment currently picking up at the rate of about two per cent a month. Lockheed has received an order for 100 more F-80 jet fighters, Ryan a $2,500,000 contract for 158 Navion four-place ships. Ryan also won an award of a contract for development and manufacture of a test quantity of jet-powered, small fast pilotless aircraft to be used as target planes.

North American will recondition 42 AT-6 trainers at its Downey plant for the Siamese Royal Air Force and Navy. The company has been doing similar work for the military services of Argentina, China, The Netherlands, Portugal, and Brazil. It now has begun construction of a $750,000 warehouse adjacent to its main plant, not far from the government-owned war plant which it relinquished at the war's end in favor of Nash-Kelvinator.

General Tire and Rubber's recently acquired subsidiary, Marquardt Aircraft Co., pany of Venice, has successfully test-flown the first pulse jet-powered helicopter—a strange craft with an engine mounted on each tip of a rotary wing. The pulsejet engine is an explosion-type motor with reed-like valves in the air inlet, as opposed to the ramjet on continuous-burning engines. Resultant simplicity is said to enable the "eggbeater" craft to carry twice the payload of conventional helicopters over relatively short distances.

The battle of the smokestacks rages unabated. Smog Czar Dr. Louis C. McCabe has met legal reverses in his effort to curtail burning of refuse at city dumps in a number of small municipalities. The oil industry has challenged the Air Pollution District's findings concerning the refineries' part in creating eye-smarting gases, asserting flatly that after 15 months of study, their experts have concluded that less sulphur dioxide is entering the pristine southern California atmosphere today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than at any time since before the war—and that a practical process is known which can reduce the concentration further.

This comparison, of course, loses some effectiveness because smog seemingly became a major nuisance about the same time that the new high-octane refineries went into operation about the middle of the war. Coincidence or not, the oil industry is widely blamed, although in the past two years it has quit burning acid sludge, switched from sulphur-bearing fuel oil to natural or refinery gases for refinery operations, and processed exhaust gases to remove sulphur compounds, including hydrogen sulphide with commercial value.

Many industrial plants, however, are burning a great deal of fuel oil which yields sulphurus fumes, and though lumber yards and wood-working factories have extensively improved their waste-burning equipment to eliminate smoke and smudge, little has been done about the many foundries which periodically belch forth dense clouds of smoke.

What might prove a happy ending, insofar as the refineries are concerned, is a proposal that the pestiferous sulphur in the waste gases might be reacted with ammonia to produce ammonium sulphate, valuable for fertilizer. The County is looking for an ammonia plant with which to try the process.

Hancock Chemical Company of Long Beach has received permission to erect a $2,000,000 plant to convert hydrogen sulphide from local refineries into useful chemical products. Oil industry chemists say they had studied the ammonia proposal previously and found that more fumes were given off after the process than are normally present in refinery stacks.

With streaming eyes, local citizens are watching and hoping that out of all the confusion may emerge a workable answer.

### Attracting Young Men to Mining

An experiment in endeavoring to attract men to the mining industry in Utah made by the U. S. Smelting, Refining & Milling Co. last spring was reported to the American Mining Congress in San Francisco in September by B. E. Grant, general superintendent of the U.S. and Lark mines at Bingham Canyon. He said:

"We sent out letters to representative colleges and universities all over the United States offering underground employment to, and requesting applications from undergraduate or graduate students wishing to work in the mines. In due course, 57 such students representing 21 different colleges and universities were employed in our Bingham mines.

"All were undergraduate students except four. One graduate student is the product of one of four scholarships in mining-milling-smelting offered under a competitive basis to sons of U. S. company's employees. Also in the group, other than those students majoring in some phase of engineering, were students majoring in languages, business, journalism, medicine, law, dentistry, personnel management, speech, and political science.

"Late in the summer and under Fred Mulock's direction our student group was conducted through the company's mill and smelter and treated to a dinner and general get-together in the company's boarding house at Lark Mine. We learned a lot about our operations from these young men, and I hope they learned something from us. Judging from the many comments we have heard, these young men will scatter our good will to many parts of the land. Several have indicated their desire to return to the mines again next summer.

"But of greater importance, these young men have viewed at first hand some of the problems that will later confront them in mine operations and have gained new ideas concerning their future studies. In part, by the above means and through our scholarship program the U.S. Company hopes to keep employed young technical men who with sufficient experience and training may later engineer, supervise and manage the operations. Of course, non-technical men are now and will always play a major role in supervision."

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# Chain Stores Offer Huge Market for Western Goods

***Many sources already developed but potential is still very great; Cheap industrial power forecast by FPC***

SAN FRANCISCO — Western manufacturers looking for markets still have a big field right at home that is only partly cultivated, the trade development panel at the California Manufacturers Association annual meeting in San Francisco, October 7, revealed.

For example, Sears, Roebuck are now buying in California 30 per cent of the requirements for their stores in the eleven Western states, and on top of this shipped to branches elsewhere in the country $17,000,000 worth of goods purchased in the West.

In a number of categories the percentage is much higher, it was reported by Ralph C. Spencer, general Pacific Coast merchandise manager for Sears. He cited the following examples:

| | *Pct.* |
|---|---|
| Furniture | 83.9 |
| Paint | 81.2 |
| Pottery and Glass | 77.2 |
| Work Clothing | 41.9 |
| Candy, etc. | 45.8 |
| Automotive Parts and Supplies | 71.7 |
| Plumbing and Heating | 56.0 |
| Building Materials | 58.4 |
| Shrubbery, Garden Supplies, etc. | 82.7 |

Much remains to be done, however, in developing more Western sources, he said. Sears does not purchase on competitive bids, he explained, but work with manufacturers to get economical distribution at prices that will best sell the goods.

Mr. Spencer's story corroborates that of Montgomery Ward, reported in *Western Industry* a year ago. Another chain organization that has built up many sources of supply in the West is Firestone Stores, whose West Coast merchandising manager, K. R. Smith, cautioned manufacturers against attempting to manufacture items without adequate knowledge of the production problems involved or the needs of the purchaser.

That Westerners are not necessarily under any handicap, however, was disproved by the experience of a young southern California firm mentioned by Mr. Smith as having invaded the Christmas tree light field successfully and selling all over the country. A similar case was reported by W. H. Bingham, president of Macy's, San Francisco, of two young men who studied the glass field carefully, went back to West Virginia to obtain a qualified operating force, and then were able to become Macy's supplier in California.

California garment manufacturers supply Macy's with one-third of the store's purchases in this line, not only women's and children's ready-to-wear, but also men's goods. From 5 to 10 per cent of the rest of the store's merchandise comes from the Coast. Mr. Bingham said Macy's would like very much to buy furniture, bedding, upholstery, soft goods such as bedspreads and draperies, appliances and radios in the West.

His view of the situation was that there were three types of manufacturing operations suitable to the West: (1) "native industry," such as utilization of local raw materials, of which china and pottery development in southern California was a conspicuous example; (2) importation of raw materials from other states in lines where Western manufacturers could still be competitive; (3) assembly operations, such as for radios. But the West lacks the technical perfection in some lines, Mr. Bingham believed, compared with other areas with many more years of experience behind them.

The Ford Motor Company West Coast purchasing program is now around $45,000,000 a year, according to T. Leonard Mikules, with nearly 50 companies participating, and one of them, Arcturus Manufacturing Co. of Venice, selling 12 per cent of all the forgings for Ford cars and trucks for the entire country. He estimated West Coast parts business for all automobile manufacturers at $250,000,000. President James Sheehan of Arcturus reported by letter to the meeting that other manufacturers beside Ford were getting under way with West Coast purchasing, mentioning specifically Chevrolet and Studebaker, and asserted that the trade development program of California Manufacturers Association had brought over $100,000,000 worth of manufacturing into the state.

California is in a good position to have cheap industrial power for the future, according to L. S. Wing, regional engineer for the Federal Power Commission, on account of its balance between steam generated and hydro-electric energy. He forecast the electrical demand as follows: in 1950 there will be 20 per cent increase over 1948, in 1960 75 per cent and in 1970 130 per cent.

Athough the West Coast seemed a few months back to be out of the shipbuilding picture for years to come because of higher production costs, it now appears that eastern and gulf yards are nearly full of work work and that before long a freighter or two may be assigned by the Maritime Commission to one of the two Bethlehem yards in San Francisco Bay. Todd Pacific Shipyards have started a $495,000 reconversion job on the C-2 Typhoon, originally laid down as a cargo carrier but now being made into a combination cargo-passenger vessel.

The Bay Area Council reports that Bay area manufacture of women's outerwear for the first quarter of this year amounted to $7,897,000, net dollar value or manufacturers' prices, and that sales are approximately double the national, or 11.9 per cent, rate of growth in outerwear manufacturing.

Tailored suits, coats and skirts represent over 70 per cent of the dollar value of the Bay Area's outerwear production. The balance of women's outerwear output was divided on a dollar basis as follows: blouses, 4.5 per cent; unit price dresses, 10.7 per cent; dozen price dresses and aprons, 13.2 per cent; and other outerwear, 0.9 per cent.

California economic activity, which showed a sharp upturn in April after a first-quarter dip, apparently will level off for 1948 considerably above last year's high levels, the California State Chamber of Commerce reports. Industrial plant expansion to July 1 was about 20 per cent under the high levels of the first half of 1947 — but the first six months of this year saw announcements of 472 new factories or plant expansions in California with an $85,505,000 capital investment.

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# Pueblo Area Attracts New Industries as Steel Center

***Mountain States T.&T. installs millionth phone; Cowpokes are getting style conscious; Nestle comes West***

DENVER—With a new orientation of industry now shaping up, since the government's anti-trust division has been crowding basing-point price structures out of existence, southern Colorado communities are snuggling up to Pueblo as never before because the steel mills at Pueblo mean the area is a favored baby for industrial development.

What may result takes two lines. First, industries prepared to utilize steel as it comes from the Pueblo mills of the Colorado Fuel & Iron Corporation, are looking ahead to see if it might not be smart for them to put in plants somewhere near Pueblo. Looking ahead is essential because the C. F. & I. will have to hump along in order to clean up its backlog of orders by 1952. But someday, even in steel, the present seller's market will run its course.

A challenging new element in the picture is talk of supplementing Pueblo's steel mills and their present facilities for turning out rail, rods and wire with a rolling mill to turn out sheet steel. What would happen to the area if sheet steel were available locally is a prospect that makes mouths water, because there are dozens or scores of manufacturing enterprises which might locate in the Pueblo area if in addition to its other advantages that city also could provide steel in sheets.

Just who might put in a rolling mill at Pueblo will take a lot of talking, planning and demonstrating. Officials of the Colorado Fuel & Iron Corporation say they have their hands full, thank you, and aren't looking for ways to invest the millions required for a rolling mill. If not the C. F. & I., then who? Well, that is the matter now being looked into by business leaders up and down the front range in Colorado, all the way from Trinidad to Cheyenne. We will keep you posted on their progress, which may be more rapid than some folks think.

### Accelerated Tempo

Growth of the mountain states area is represented by many indexes ranging from the number of ounces of gold and silver produced annually to the amount of land under cultivation. The telephone company has its own eye-opener: the millionth telephone in the area was installed a few weeks ago. It took the company 60 years to grow from its first telephone in the region to the 500,000th. That was in 1939, when the half-million mark was reached after more than half a century of steady progress. *But the second half-million was scored in less than ten years!* Despite postwar shortages, the Mountain States Telephone & Telegraph Company has been installing new telephones at a furious pace. Just in Colorado, the company has put in 95,400 new telephones since Jan. 1, 1946 — more than in the previous 10 years combined. The Colorado total is now about 362,000 telephones. And the phone company still hasn't caught up with its back-orders. There's progress!

### Scramble For Safety

Frankly admitting that the war scare is responsible for moving its executive offices from New York to Colorado Springs, the Nestle Company, Inc., has given other seaboard enterprises an object lesson.

In 1938 the Nestle Alimentana of Vevey, Switzerland, got out of Europe and settled in Stamford, Conn. Now the congested New England area doesn't look very promising as a place to be during an atomic war, so the company is getting away from it all by moving to a town of less than 50,000 at the foot of Pike's Peak.

The company manufactures soluble coffee, tea and milk chocolate products, including the nationally-advertised Nescafe, an instantly soluble coffee. A million dollar office building, with its entrance facing Pike's Peak, will be built on a site already acquired. In addition to 200 employees to be moved from New York, about 200 more will be recruited locally.

The Colorado Springs Chamber of Commerce is stepping up its drive to win new industries seeking de-centralized locations and has attractive and informative booklets and data sheets awaiting all firms thinking of re-locating in a spot that offers maximum safety along with other advantages almost breath-taking in their full range and scope.

### Fancy Pants and Jackets

Dressing the style-conscious cattleman and cowboy is getting to be an impressive business and one in which Denver manufacturers are making plenty of hay.

Glenshore Manufacturing Company of Denver is turning out about 3,000 pairs of stockman's pants each week, made of preshrunk woolens and sanforized corduroy. Each week hundreds of jackets and coats are turned out in the same plant, built to suit the taste of the cattleman who wants to feel dressed up without looking like a dude. Herman Shore is president and Glenn Van Bebber vice-president of Glenshore.

And if you think outfitting cowboys and ranchers is going out like the buggywhip business, stop in at George W. Prior Company on Denver's Lawrence Street, between 17th and 18th, or the other Prior factory at 1531 Wazee Street in Denver. Prior puts out 6,600 pairs of blue jeans each week, plus 3,600 blue denim cowboy jackets and 4,800 fancy Western shirts. They're sold all over the country, with southern California the livest market for the loudest shirts. Prior products include a full line of Western sports togs such as hats, ties and 'kerchiefs, belts and novelties. A. R. Strachan founded the business in 1932 and Reith Strachan, his son, heads it today.

This could go on and on, telling about various Colorado firms making Western clothes and equipment, but for now we'll mention just one or two more. Over in Boulder, foothills beauty spot and seat of the state university, Oscar Crockett has manufactured $3,000,000 worth of bits and spurs since 1943. A former Texas cowboy from the Pecos River country, Crockett started his manufacturing enterprise in a Kansas City blacksmith shop. Now his Boulder factory has 60 skilled workmen and Crockett bits and spurs are shipped wherever people ride, including South America and Australia. Nice going.

Not far from Boulder is the town of Fort Morgan, Colorado, where the glove factory of the Wells Lamont Company is now turning out canvas gloves, first of more than 100 varieties soon to be moving

*(Continued on page 90)*

UNION PACIFIC

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Sincerely,

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# Fear of Special Taxes May Hold Back Utah Industry

***Severance Tax on Natural Resources Held a Threat to Development of Area; Geneva Steel Leads Efforts to Keep Politicos From Adding to Burden; Phosphate Prospectors to Get Priority***

SALT LAKE CITY—Recognizing that this area is more industry-conscious than it has ever been before, Utah political office seekers are playing this theme up heavy in their campaigns. But inasmuch as all the candidates are for more industry no one can build an issue out of the broad generality.

What the business and industrial communities are most vitally interested in is what the winners propose to do in the fields where they can encourage or discourage new industry—such as taxation and labor relations.

One specific threat hanging over the head of industry is a severance tax on natural resources. It has been introduced into the state legislature time after time but never with much push behind it. But this year the Democratic state platform carries an endorsement of some such tax. It was put in at the behest of organized labor, without which the party would have no chance of carrying the state. While the issue has not in the past divided the legislative bodies on the party line, and while legislators normally pay little attention to platform commitments, it will constitute one additional bit of pressure on Democrats who are elected to the state lawmaking body.

A severance tax, if enacted, would fall most heavily on mining, as that is the most important natural resource using industry in the state. In the past the proposed legislation has been aimed primarily at the copper mining industry, but because of anti-discrimination constitutional provisions, it would have to hit a lot of targets.

One of these targets would be steel (via iron ore, coal and fluxes). And this in turn would give added weight to a complaint recently voiced by Dr. Walther Mathesius, president of Geneva Steel Co., which is already embroiled with state agencies over a couple of tax matters.

"All of us," he said, "have been hearing for several years now how anxious the state of Utah is to encourage industrial expansion. . . . The highest members of state government, both in the executive and legislative branches, have addressed strong words of encouragement to those who would come to Utah to locate their manufacturing plants. . . . Special encouragement has been given from time to time to these companies in regards to Utah's tax climate. Utah, it was said, would see that its tax structure was built and administered to encourage this new industrialization, so essential to Utah's welfare.

"It is regrettable, in my opinion, because it is contrary to the best long-range interests of the state, that too frequently local taxing authorities still are tending to look upon new and larger industries primarily as handy sources from which to collect disproportionately heavy direct taxes. . . .

"Most certainly, this attitude stands in strange contrast to the encouraging pronouncements by which . . . Utah's government has invited industry into the state. Furthermore, agitation is proceeding apace throughout the state, apparently condoned if not encouraged by certain tax-hungry groups in and out of office, to heap upon industries more special taxes, to 'pour it on' as their slogan goes. I contend that this is a short-sighted and selfish attitude, which does not have at heart the best interests of the state as a whole."

It was the first direct and pointed complaint about the attitude of the state from the Geneva Steel Co., which has done an outstanding job of public relations in this area.

### Hope For Phosphate

Companies and individuals interested in developing intermountain phosphate deposits received assurance at a recent hearhearing in Pocatello, Idaho, that the U. S. Department of Interior will give careful consideration to the desires of the industry in drafting regulations for the leasing of federal lands.

One thing the industry spokesmen asked for is the right to prospect land before leasing, with the prospector being given preference for subsequent leasing. Department officials indicated that this would be done. Representatives of the industry also objected to competitive bidding features of a proposed set of regulations. Assurances were not so definite on this point.

The lumber shortage has given Utah's small timber industry an importance it has not heretofore enjoyed. In the Wasatch national forest, for example, cuttings rose to an all-time high of 8,000,000 board feet last year. This year the total will be approximately 10,000,000 board feet, for a new record.

The native lumber is used principally for mine timbers, rough construction work and packing crates.

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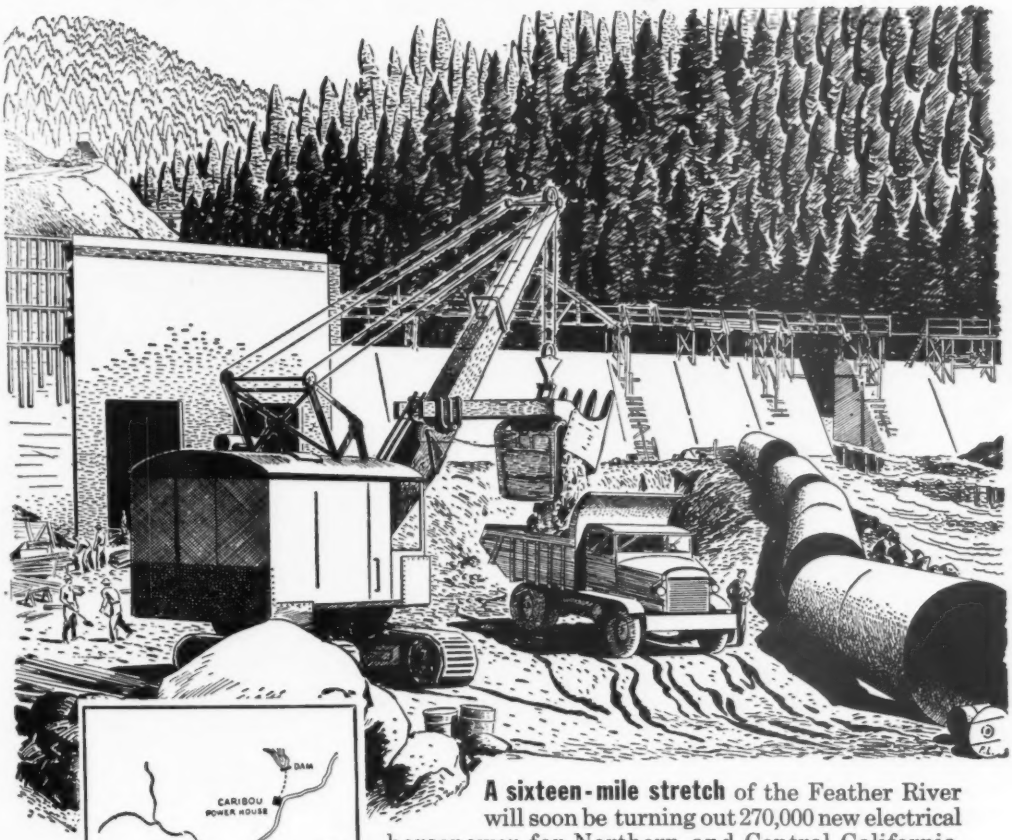
### New Methods of Beneficiating Lead

New methods of beneficiation of lead carbonate ores are indicated in a metallurgical investigation by Kenneth Earl Royer of the flotation of an oxidized lead ore. The study, made for the School of Mines, State College of Washington, resulted in the following conclusions:

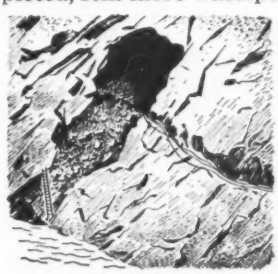
1. One-step flotation circuits will give satisfactory results for galena and cerussite ores.
2. The minerals cerussite and galena are floated from the ore with equal effectiveness using oleic acid as a collector.
3. Close control of the oleic acid will give better control of the flotation of some non-economic minerals. Oleic acid will collect lead carbonate and lead sulphide when there are a number of common activators and depressing agents in the pulp, for example, sodium silicate, sodium dichromate, sodium cyanide, tannic and lactic acids.
4. Sodium dichromate depresses the gangue minerals, allowing higher grade of lead concentrates.
5. Oleic acid floats the slimes which are high in lead content.
6. Results are more favorable at elevated temperatures.
7. Brittle frothers will tend to counteract the stiff froth made by oleic acid.

# New Feather River Power Coming Soon



**Map shows** location of the two new plants—Rock Creek and Cresta . . . along with three already built. A system of several dams and powerhouses like this one is an extremely efficient power producer and helps conserve water for irrigation.

**A sixteen-mile stretch** of the Feather River will soon be turning out 270,000 new electrical horsepower for Northern and Central California. Two new dams, two new powerhouses and tunneling are already well underway...and when they are completed, still more waterpower will be harnessed.



**Two of our biggest** water tunnels are part of the new construction . . . 10½ miles of tunnels large enough for a double track railroad. We're going ahead full speed, and the project, begun in 1946, will begin delivering power next fall.

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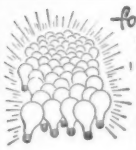

These two new dams and powerhouses will generate enough power to light 2 million 100 watt light bulbs.

But they're only part of a giant power-building program that will step up P.G. and E. capacity nearly 2 million horsepower.

This program—largest in America—has created 6,000 new jobs.

*Work never stops on our power-building program*

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**PACIFIC GAS AND ELECTRIC COMPANY**

WI-111-1148

# Alaska Development Program Really Getting Started

***Rebuilding Alaska Railroad Is an Important Step; More Tourist Accommodations Needed; Sustained Yield Is Forest Management Plan***

PACIFIC NORTHWEST—Alaska is slowly making headway toward real development. Highway construction, revamping of the Alaska Railroad, pulp and paper mill projects and big military expenditures join in moving the territory forward.

Approximately $121,000,000 has been appropriated by government agencies for the current fiscal year, with probably that much more to be spent in the near future. The Army's plans alone are of tremendous importance, in view of the estimate by Lt. Gen. Nathan Twining, head of the Alaska Command, that construction costing $2,500,000,000 is needed to protect the territory.

The Alaska Railroad also is on its way to being converted from a liability into an asset. The three-year rehabilitation program is estimated at more than $50,000,000, and includes rebuilding the road, constructing new bridges, adding new rolling stock.

One of the big troubles with the road traces clear back to Congress, which has demanded that the road earn its own keep. The result has been that freight charges had to be put so high that business has been driven away. People in the Northwest feel that Congress should look on the railroad as a development project and put the rates down low so as to encourage development of the territory, thus building up tonnage for the road at the same time.

A drawback to the present tourist business is that the visitors have no real opportunity to stop off and look around, and the steamship lines have not encouraged stopovers because it would be necessary to allow more cabin space which would only be filled part of the time. It is thought that if visitors could stay a week or two at Juneau's fine Hotel Baranof, for instance, they would be more likely to become interested in making investments in Alaska or even becoming residents. Air travel may remedy this difficulty, and ultimately there might be tourist hotel ventures.

Two other steps are hoped for. One is to give the Indians in southwestern Alaska full citizenship, in view of the fact that their living conditions and occupations are virtually the same as the whites. The other is to let the territory have some say in the choice of its governors, instead of being subject to the more or less tender mercies of Washington in making appointments of people from the outside whose previous knowledge of Alaska is probably zero.

### Forest Program

Forest management and sustained yield along with treatment of the wood itself were given considerable attention to the Western regional meeting of the American Chemical Society at Portland in September. Integration of wood utilization in the Pacific Northwest may take the four following patterns, according to Edward G. Locke, of the Pacific Northwest Forest & Range Experiment Station:

1. Ownership and operation of forest land by the same company owning and operating utilization plants.
2. Ownership and operation of the forest land by one company and ownership and operation of the utilization plants by another with long-term contracts between the two.
3. Ownership and operation of the utilization plants by a company composed of a number of owners and operators of small forest holdings.
4. A large number of owners and operators of forest holdings may sell their product in a general market in a given area to supply a wide diversity of utilization enterprises.

Wood now burned or left to rot can be the source of carbohydrates for supplementary stock feed and several other by-products, it was reported by Edwin E. Harris of the Forest Products Laboratory, Beltsville, Md. The principal step in the process is the producing of wood sugar by hydrolysis and evaporation. The extracts from the wood make the sugar solutions bitter, and a method of recovering the bitterness is being studied.

Molasses for feeding poultry is also being made from Douglas fir waste, containing about .45 per cent of fermentable sugars, according to James McGinnis of Washington State College, Pullman. Another use for the pentose sugars from wood waste is the development of Torula yeast, suitable for a feed yeast because of its rapid rate of propagation, it was reported by W. M. Noble of Albers Milling Co., Los Angeles. Another example of possible utilization is the manufacture of naval stores from ponderosa pine stumps at an average rate of 500 pounds per ton, according to Dr. Arthur B. Anderson of the Western Pine Association.

### Door Production Peak

Fir door production in the Pacific Northwest will reach an all-time high of 9,000,000 doors this year, predicts Thomas B. Malarkey. The 7,800,000 doors produced in 1947 were far below the demand, which he estimated at 11,250,000 doors.

Although the aluminum plants in the Northwest have been able to operate considerably longer this year than originally expected, nevertheless the electric power situation still continues critical. Dr. Paul J. Raver, Bonneville Power Administration administrator, declared at a recent industrial conference in Tacoma that Bonneville would sign no more firm power contracts with existing or new industry.

"We need another Grand Coulee dam by 1956 for known peace needs," asserted C. A. Erdahl, Tacoma public utilities commissioner.

At the American Society of Mechanical Engineers convention in Portland, Dr. Raver cited a letter from Vice-president I. W. Wilson of Alcoa that the demand for aluminum for peacetime use exclusively will be short 275,000 tons this year, and by 1952 the shortage will reach 375,000 tons. This does not include aluminum for military needs. Dr. Raver estimated that the 70-group air force will require after 1953 about 100,000 additional tons of aluminum annually just for maintenance and replacement.

Estimated demand, he said, would require between one and two million tons of additional primary aluminum capacity by 1960, for which between two million and four million additional kilowatts of power capacity will have to be built.

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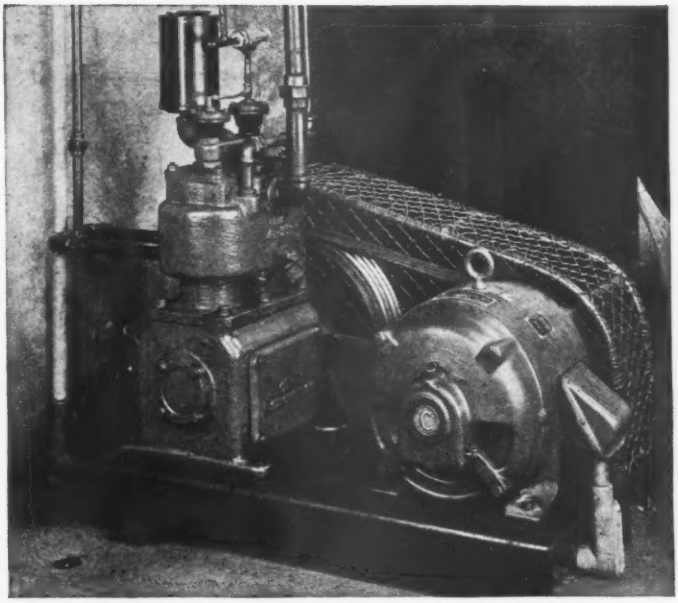

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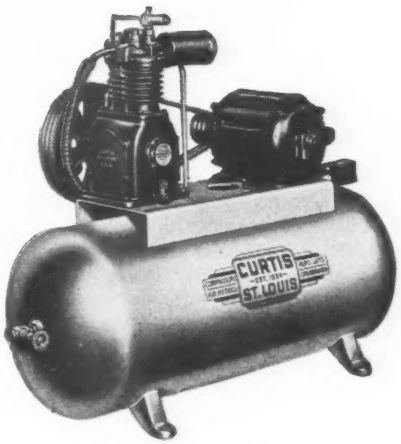


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# Overtime-on-Overtime Goes Into Effect

CONGRESSIONAL action probably will be necessary to correct the situation created by the recent ruling of the U. S. Supreme Court on the "overtime on overtime" decision. In affirming its previous decision of last June, the Court authorized overtime payment for workers who already get premium pay for working undesirable hours. As a result, interpretations based on the decision by the wage and hour division of the Labor Department were scheduled to go into effect October 18.

It has been estimated that, if put into effect, the ruling would cost the Government itself about $300,000,000, for back pay claims under wartime contracts.

In the West, the principal industry affected would be shipping, where the liability has been estimated as high as $20,000,000 in back pay claims. Numerous suits for recovery of such pay are now in the courts, and only legislative action would outlaw them. In other industries, such as steel, it has been a policy to avoid as nearly as possible the accumulation of such overtime work. and liabilities are not as high as in the shipping field.

The ruling itself holds, in effect, that a worker receiving premium pay for nights, Sundays or holidays, who works in excess of 40 hours per week, must be paid overtime based on the premium rate. Government attorneys asked for a rehearing following the June decision. and it was this petition which the Court has just denied.

It has been revealed, however, that during the current term of the high Court, the nation's labor laws will be given considerable attention. Two cases limiting union picketing and boycott activity will be ruled upon, including California's "hot cargo" law, the constitutionality of which has been questioned. This law bars any agreement by workers to refuse to handle goods or perform services for their employers because of a dispute between a union and some other employer with whom their employer does business.

The Supreme Court agreed to review the decision of a lower court that a textile mill had not violated the labor act by increasing its workers' pay by considerably more than anything offered during negotiations with the plant union and after bargaining had reached the deadlock stage. It was the contention of the NLRB that the company had not bargained in good faith in the first place, and had used the wage increase as a "union busting" tactic.

Another decision due for review is one which declared that employees of an irrigation company do not come under the exemption of agricultural workers in the Fair Labor Standards Act.

### Starting Time Survey

Starting time is frequently the subject of considerable dispute in contract negotiations between labor and management. Most recently it has been a matter for collective bargaining between the Furniture Employers Council in Los Angeles and the United Furniture Workers, CIO. In a survey of 21 plants representing all parts of the industry, it was found that five plants start work at 7 a.m., nine start at 7:30, one at 7:45 and six at 8 a.m.

The agreement between the furniture manufacturers and the union provide that "The regular working day for day shifts shall be from 8 a.m. to 4:45 p.m., with 45 minutes for lunch. The regular starting time and lunch periods may be changed by mutual agreement of the parties."

According to a recent report, when an employer went to a 7 a.m. starting time during the war years in response to the national emergency, but only because of this, a board of arbitration held that the employer could return to the 8 a.m. starting time in the absence of a formal mutual agreement between the employer and the union to maintain the 7 a.m. time. The only exception was the period from June 15 to September 15, when the starting time is to be 7:30 a.m.

### Income Payments

Come pay day this may seem hard to believe, but if you live and work for wages in the West, you're earning more on the average than anyone else in the country. According to figures prepared by Twelfth District Federal Reserve Bank, total income payments between 1939 and 1947 rose 220 per cent, compared with a 40 per cent increase in population. Since 1929, first year figures were available, per capita payments in the district have been from 20 to 31 per cent higher than the rest of the nation. (The 12th District includes Arizona, California, Idaho, Nevada, Oregon, Utah and Washington.)

Nevada, with the smallest total income payments, has the highest per capita income in the United States, $1,842, compared with second place New York, the state with the largest total income payments, but with a per capita income of $1,781.

### Port Authorities Urge Release of Facilities

American commercial and public ports, the mainstay of the nation in both peace and war, want some protection from the nation's armed forces in the event of another national emergency, according to A. H. Abel, port manager and chief engineer of the Port of Oakland, who was elected first vice-president of the American Association of Port Authorities at its recent convention in Montreal, Canada.

"The member ports of the Association felt that the errors and inequalities of the last war should be avoided in another conflict," Abel said, "and decided at Montreal to urge a definite policy by the national government. Some of the ports, including Oakland, are still endeavoring to secure the return of facilities used by the armed forces during the last conflict."

The three policies to be urged on the Federal Government by the Association, Abel declared, are: no taking in perpetuity by the government of commercial port lands or facilities, maximum use by the government of the existing civilian port personnel, familiar with the facilities and their capabilities, and return of the facilities to their owners at the earliest possible time following the cessation of active hostilities.

The Association also recognized the seriousness of the disruption in wage rate bases for collective bargaining between employers and employees in stevedoring, port terminal warehousing and handling, resulting from the interpretation of the Fair Labor Standards Act by the U. S. Supreme Court decision in the so-called "overtime on overtime" cases and urged Congress to take immediate action to amend the act to clarify and interpret the meaning of overtime in order that pending negotiations on renewed contracts be hastened and the confusion in Congress of overtime be promptly removed.

W. Reginald Jones, Oakland port attorney, was a member of the resolutions committee.

## WESTERNERS AT WORK

*(Continued from page 58)*

John R. Dodson, vice-president and treasurer, Jantzen Knitting Mills, Portland, has announced his plan to retire to a home at Laguna Beach, California. His successor will be named early in 1949.

### Utah

Walter M. Horne, former Salt Lake City resident, has returned to take the post of assistant manager of the Utah Mining Association. He has been in the insurance business in Arizona for the past five years.

Joseph Parmley, vice-president of the Utah Fuel Company, Salt Lake City, named a member of the National Coal Association committee which will draft a plan for providing allocation of steel for maintenance, repair and operation to the bituminous coal industry.

### Washington

Joseph E. Nolan elected general counsel for the Weyerhaeuser Timber Company, with headquarters at Tacoma, in the place of Edmond M. Cook, elevated to a vice-presidency.

Joseph G. Lehman elected vice-president in charge of sales by Nalley's Inc., Tacoma food products firm. He was formerly in charge of the eastern Washington district.

B. E. Turpening, formerly Colorado district manager for West Coast Fast Freight, Inc., is named Seattle district manager in the place of Frank Baxter, who resigned to manage his own business.

C. G. Jordon has been transferred from Chicago to become general agent for the Canadian Pacific Railway Co., in charge of both rail and steamships.

W. P. Gullander selected to take charge of Seattle and Tacoma operations of the General Electric Supply Co., replacing H. C. Gerster, who has been moved to Los Angeles, where he will manage Southern California and Arizona for the firm.

E. Wayne Everhart has joined the Kaiser Aluminum Research Department of Permanente Metals Corp., Spokane, as head of the corrosion laboratory. He came to Permanente from the Glenn L. Martin Company.

E. Wayne Everhart

Howard A. Ziebell is the new general manager for Northwest Magnesite Company at Chewelah, having been promoted from superintendent of mining and milling.

Chester L. Seeley has replaced Lee S. Libby as president of John W. Graham & Co., Spokane, following the latter's retirement. Mr. Seeley was vice-president and general manager.

L. J. Kidd, assistant Western traffic manager, C., M., St. P. & P. Ry., named general agent of the freight department, Seattle, succeeding J. E. Marshall, transferred.

E. P. Marsh, former president of Washington State Federation of Labor, named regional director, U. S. Mediation and Conciliation Service at Seattle. His office will cover Washington, Oregon, Idaho, Montana, Utah, Wyoming and Alaska.

### Wyoming

W. A. Glassford transferred from Boston to United Air Lines educational training center at Cheyenne. He was formerly district traffic manager for UAL at San Diego, going to Boston in 1947.

William R. Callaway recently resigned as manager of Victoria Mines, Inc., Sheridan, to become associated with Hodges Research and Development Co., Redwood City, Calif. He is a past v.p. of the Mining Association of Montana.

### Associations Elect

Joe D. Thomison appointed secretary-manager of the Prineville, Oregon, Chamber of Commerce. This is first time the organization has had a full-time executive.

J. M. Glick, of B. E. Glick & Sons, Corning, Calif., returned for a third term as president of the California Olive Association. A. H. Bell, Bell Packing Co., Berkeley, reelected vice-pres.

T. Harry Gowman, Seattle, elected first vice-president of the American Hotel Association.

Mel March, South Pacific Canning Co., Long Beach, elected president of the California Fish Canners Association. J. V. Morris, French Sardine Co., Terminal Island, is now vice-president, and R. H. Beaton, general manager.

Additional terms on the industrial management committee of the Douglas Fir Plywood Association were recently approved for B. V. Hancock, vice-president of Cascades Plywood Corp., Portland; Frost Snyder, president of Vancouver (Wash.) Plywood & Veneer Co., and Herman E. Tenzler, president, Northwest Door Co., Tacoma.

H. Bob Robinson, of the Robinson-Morris Engraving Co., Portland, elected president of the Western States Photo-Engravers Conference.


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# THE WEST ON ITS WAY

## ARIZONA

NEW GOLD STRIKE—Production is under way at the Golden Door mine of the Arizona Gold & Silver Mines Co., north of Kingman, following a new strike assaying from $37 to $89 a ton. Prior to the war the mine was producing 100 tons of ore per day.

NOGALES GENERATING PLANT — A new power plant will be erected at Nogales by the Utilities Service Company, at a cost of $704,000, following authority by the state to issue bonds covering the project. Present power obtained from Fort Huachuca will be cut off next May when the government disposes of the military reservation.

NEW SOIL CHEMICAL PLANT—Production is now in progress at the new $75,000 plant of Gilco Corporation, Phoenix, on a liquid chemical compound for agricultural use in correcting acidity in soil. Plant capacity is 60,000 gallons daily, according to William Hazzard, plant manager.

WINS SAFETY AWARD—Metropolitan Lines, Inc., Phoenix transportation company, has been named the safest city transportation system in the United States for the past year by the National Safety Council. In the 17th annual National Fleet Safety Contest, Metropolitan drivers covered 3,391,927 miles with only 59 reportable accidents.

ROCK WOOL PRODUCTION STARTED—Sun Valley Manufacturing Corporation, Phoenix, has begun production of rock wool from slag in a new $85,000 plant at 950 No. 20th Avenue. F. C. Ramsing is general manager of the plant, which has a daily capacity of 30 tons.

## CALIFORNIA

EUREKA GLUE PLANT—M & M Wood Working Co. plans to erect a glue plant at Eureka to serve the needs of its Eureka Plywood Co. division.

MICHIGAN PLANT COMES WEST—A moulding plant will be operated at Merced by Dedo Products Co., which is shipping its machinery from the former location at Birmingham, Mich. Homer E. Dedo is owner.

NEW FIRM NAME—In line with a company policy of better identifying various divisions which manufacture similar equipment, the Bean-Cutler Division of Food Machinery Corporation, San Jose, has been changed to John Bean (Western).

RICHEST GOLD STRIKE—Gold ore assaying $700 a ton is being recovered from a new vein opened in the Kelly mine, seven miles south of Hayfork, near Weaverville. Tom Kelly is owner and operator of the property.

BAG PLANT PURCHASED—West Coast Bags, Inc., Los Angeles, has been bought by the Fulton Bag & Cotton Mills, Atlanta, Ga. J. C. Baldwin, president of West Coast Bags, will remain as manager, assisted by Otis G. West.

BUS LINES NAMED — Continental Bus System is the new name adopted by the organization operating the West Coast, Santa Fe, Dixie and Continental Trailways.

NEW PARTS PLANT—Escondido has been selected as the site of a 40-acre aircraft parts plant to be erected by W. J. Jack, former head of Jack & Heinz Co., Cleveland. Mr. Jack estimates that 2,500 persons will be employed, 1,500 of whom he expects to come from the Cleveland area. At least 400 new dwellings are planned also.

PAPER PLANT FOR SACRAMENTO—The Zellerbach Paper Company expects to begin operations in a new plant at Sacramento early in 1949. Campbell Construction Company, Sacramento, is building the new distribution and warehouse structure on a 10-acre site.

GENERAL ENGINEERING SOLD—Entire facilities of General Engineering & Drydock Corp., including plants in San Francisco and Alameda, have been purchased by the Loyola University Foundation. No change in personnel is contemplated, and W. L. Montgomery is continuing as president.

METALS EXPOSITION — The Sixth Western Metal Congress and Western Metal Exposition will be held in Los Angeles, April 11-15, 1949, according to W. H. Eisenman of the American Society for Metals, which is sponsoring the meeting.

• Morck Brush Division's new San Francisco home.

BRUSH PLANT FOR SAN FRANCISCO—Morck Brush Division of Pittsburgh Plate Glass Company has taken a 15-year lease on a three-story building in San Francisco's industrial area for manufacture of high grade paint brushes. Frank J. Tippett is general manager.

EXPANSION CONTINUES—Another huge steam-operated generating plant will be constructed near Sando, Contra Costa county, by the Pacific Gas & Electric Company, which is currently spending in excess of $10,000,000 per month on a postwar expansion program. The new plant will have a capacity of 402,000 horsepower. Equipment will operate either with gas, oil or coal.

NEW OXNARD PLANT—Allis-Chalmers Manufacturing Company is constructing two new buildings on a 15-acre site at Oxnard, at a cost of about $100,000. Larger of the two buildings will be used for steel cutting operations, and the other for experimental engineering for the firm's tractor division.

WESTINGHOUSE EXPANSION — Construction was scheduled for completion on November 1 of a new 100,000 sq. ft. apparatus and lamp warehouse for Westinghouse Electric Corporation at Los Angeles. Southern California, Arizona and part of Nevada will be served from the warehouse.

COAST REDWOOD SOLD—The Simpson Logging Company has purchased the sawmill facilities and timber rights of the Coast Redwood Company, Klamath. The force of 375 men is being retained.

EXPANSION AT FONTANA—Construction of a new $17,000,000 blast furnace and related facilities at their Fontana plant has been announced by the Henry J. Kaiser Companies. The additional equipment is necessitated by a contract with Transcontinental Gas Pipe Line Co. to purchase approximately $60,000,000 of steel plate from Kaiser for a natural gas pipeline from Texas to New York.

EMPLOYMENT LEVEL ASSURED—Successful bidding on a $5,000,000 sub-contract by Consolidated Vultee Aircraft Corp., to furnish 167 nose fuselage sections for Boeing Airplane Co. has assured maintenance of present employment levels at Convair's San Diego plant. First delivery is set for the Spring of 1949, and Convair expects to have a $100,000 monthly payroll by that time.

TRUCK PARTS BY AIR—To maintain sustained truck assembly operations at the Oakland plant, the Chevrolet-Oakland division of General Motors Corp. has been shipping in parts by air. More than 25 tons of fenders, hoods, cab tops and other materials were flown to Oakland during one week recently.

FIRM CHANGES NAME—The Southern California Glass Company, which has been manufacturing Hollobilt aluminum doors, tub and shower enclosures under the name of the Eugene Extruded Metals Corp., has changed the name of this subsidiary organization to the Hollobilt Company. Offices are at 2445 So. Santa Fe Ave., Los Angeles.

LARGEST COTTON OFFICE—The new office and laboratory of the United States Department of Agriculture at Bakersfield has opened recently, to handle classing of an estimated 3,000,000-bale cotton crop this year. Samples drawn from bales in bonded warehouses are graded without charge, and the Bakersfield office, said to be the world's largest, will class cotton from West Texas, New Mexico, Arizona and California.

PLANING MILL AT CORNING—Crane Mills is erecting a $200,000 planing mill at Corning, which will have an estimated capacity of 250,000 board feet per day.

NEW BRASS FOUNDRY—Rincon Iron & Brass Foundry expect to employ 40 persons in their new operation at 52 Sherman St., San Francisco.

*(Continued on page 76)*

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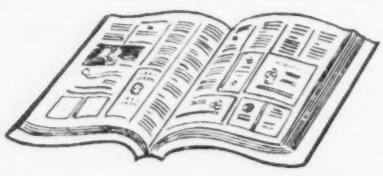

The Pacific Telephone and Telegraph Company


## THE WEST ON ITS WAY

*(Continued from page 74)*

METAL COMPANY MOVES—Mars Metal Company has moved from 23rd & Minnesota to Visitacion Valley, San Francisco, where expansions of their operations will cost $100,000.

INSURANCE HEADQUARTERS — Insurance Company of North America is constructing a $200,000 building in San Jose which will serve as their Pacific Coast headquarters.

SOUTHERN CALIFORNIA DEVELOPMENT—Oakman Tool Company has moved from Detroit to North Hollywood to manufacture aluminum toys. Walker Mfg. & Machine Co., Lynwood, has begun production of centrifugal pumps. Paramount Wire Products, 3727 Avalon, is a new factory making lamp shades, racks and general wire work. Harn Mfg. Co., Cleveland, is opening a branch plant in Culver City to make quilted bed pads and nursery furniture pads. M & K Custom Hatters has moved its manufacture of men's felt hats from New York to 117 W. 4th St., Los Angeles. Southern California Glass Company is building a 50,000-sq. ft. building at 2736 Leonis Blvd., Los Angeles. Pacific Diamond H Bag Company now occupying quarters at 1815 Sacramento St., Los Angeles, for manufacture of burlap and cotton bags. John Morrell & Company, meat packers, to add a three-story structure to their plant at 1335 Willow. Bauman Bros. Furniture Mfg. Co. has added 32,000 sq. ft. to their plant at 6236 So. St. Andrews Pl. Phillips Mfg. Co. in a new location at 1159 So. Soto St., for manufacture of soda fountains and stainless steel refrigeration equipment. Metalcraft Products Co. has acquired an additional plant at 435 E. 16th St., to make hinges for convertible sofa-beds and platform rockers. General Furniture & Frame Mfg. Co. has acquired two acres in Bell where a plant will be erected for making furniture frames and a line of maple living room furniture. McCulloch Motors Corp. has added 4,800 sq. ft. to the plant at 6101 W. Century Blvd. for expanded manufacture of industrial engines, power saws, portable heaters and one-wheel trailers. Cal-Fin Corp., South Pasadena, is building a new plant at Monterey Park for expanded manufacture of finned tubing. Aerojet Engineering Corp., a division of General Tire & Rubber Co., has announced purchase of its 68-acre plant at Azusa from War Assets Administration. Plant has a monthly capacity of 20,000 liquid and solid propellant rocket power plants and boosters. International Silver Company has moved its West Coast headquarters from San Francisco to 643 So. Olive St., Los Angeles.

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G-E TO EMPLOY 500—The huge apparatus plant which General Electric is building at San Jose at a cost of $3,000,000, will be operating at capacity by January 1. It is estimated that 500 persons will be employed, with a monthly payroll of $2,000,000.

NEW HOSPITAL PLANNED—Contract for one of the largest hospital contracts in Northern California has been awarded to Haas & Rothschild, San Francisco, for construction of a new ward building and tuberculosis hospital at Eldridge, Sonoma county. Cost will be $2,278,000.

BOTTLING PLANT STARTS—Production has begun at the new San Francisco plant of the Charles E. Hires Company, beverage concern. I. H. Taylor is manager of the plant, which has a daily capacity of 6,000 cases and employs 35 persons.

ANOTHER HUGE POWER PLANT—Bechtel Corporation, San Francisco, has been awarded a contract by the Pacific Gas & Electric Company to construct one of the largest steam-electric generating plants ever built, two miles east of Antioch. Total cost is estimated at $51,500,000, comprising one of the major portions of PG&E's multi-million dollar expansion program. The station will furnish 400,000 of the 2,000,000 horsepower that PG&E is adding to its system. Field work will start next year, with completion scheduled for 1951.

ROHR AIRCRAFT EXPANDS—A vacant property adjoining the Rohr Aircraft Corporation plant at San Diego has been leased from the War Assets Administration to take care of Rohr's rapid expansion caused by increasing orders from principal airplane builders for engine assemblies. Rohr has doubled last spring's employment, and expects to have 3,000 workers by early 1949. New facilities include a main assembly plant, engineering, office, and maintenance buildings.

SUNNYVALE PLANT TO BE SOLD—Westinghouse Electric Corporation has announced plans to purchase the huge 57-acre Sunnyvale Works leased 19 months ago from The Joshua Hendy Iron Works. Operation of the plant was started in March, 1947, when Westinghouse leased the property for 10 years with an option to buy by November 30, 1948. Purchase price of the immense plant is $3,472,151. The company reports that an additional 900 workers should be employed by the first quarter of 1949, bringing the payroll to 2,700.

*(Continued on page 78)*

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THE RIDGE TOOL COMPANY • ELYRIA, OHIO

# THE WEST ON ITS WAY

## COLORADO

CITY BUYS AIR FIELD—The City of Colorado Springs has acquired title to Army Air Force installations at Peterson Field which were valued at $12,000,000. Plans call for operation of a commercial airport on the site as well as development of an industrial area by use of some 600 buildings purchased with the establishment.

POWER PLANT PLANNED—An $800,000 power generating plant will be built at Hugo as part of an expansion program outlined by the K. C. Electrical Association of southeastern Colorado, following purchase of power lines in Cheyenne, Lincoln and Kit Carson counties from the Inland Utilities Corporation. In addition, 1,025 miles of distribution lines and 90 miles of new transmission lines will be constructed.

LEASE EXTENDED—Julius Hyman & Co., Denver, has obtained an extension of their lease on the Rocky Mountain Arsenal from five to 20 years. The firm manufactures chemical products for control of agricultural insect pests.

## IDAHO

UNIVERSITY EXPANSION—Construction has started on the $500,000 building program at the University of Idaho, Moscow, with the largest item of modernization to be a school heating plant. Work on the plant is estimated to cost $265,000.

## NEVADA

MINE STARTS PRODUCTION—After a development program of more than a year, Copper Canyon Mining Company has started taking ore from a new deep-level zinc-lead-silver orebody at Battle Mountain. A 350-ton concentrator has been put to work.

NEW FLOTATION MILL—A 200-ton flotation mill has been built by Imperial Lead Mines which recently purchased properties of the Union Lead Mining & Smelting Co. in the Steamboat Springs area near Reno.

COPPER DEVELOPMENT—Purchase of 30 claims of the Airlanes Gold Copper Mining Co. by American Smelting & Refining Co., 42 miles southeast of Lovelock, will result in opening what may prove to be one of Nevada's greatest copper districts. The ore area is 6,000 feet wide and 18 miles long.

## NEW MEXICO

NEW MACHINERY PLANT—R. L. Harrison Co., distributors for the Caterpillar Tractor Company, expect to open their new home in Albuquerque on November 15. The plant is one story high and occupies a full city block.

PRODUCTION OFFICE OPENED—The Sun Oil Company has established a new production office at Roswell, under the direction of Simeon B. Christy, formerly of the Denver division of the company.

## OREGON

POWER PROJECT STARTED—Portland General Electric Company has begun construction of the $800,000 steel tower transmission line to bring additional power to the city from Bonneville. The line will join Pacific Gas & Electric Company lines at Troutdale, and is part of PG&E's $7,500,000 expansion program.

STEEL FOUNDRY BOUGHT—Shofner Iron & Steel Works, Portland, has purchased the steel foundry which it operated during the war, from RFC and War Assets Administration. John Ebele is plant manager.

NATIONAL BISCUIT PLANT—Construction is well under way on the $6,000,000 building for National Biscuit Company at Portland. L. H. Hoffman, Portland contractor, is in charge of construction. Between 700 and 1,000 persons will be employed when the plant is completed in about 18 months.

MILL NEARING COMPLETION—Production is expected to start early in 1949 at the $6,500,000 sawmill and sulphate plant of Weyerhaeuser Timber Company at Springfield. The program includes erection of a sawmill with 300,000 board feet capacity per day, a sulphate plant for making material for fibre containers, three 720-ft. shipping sheds, a cafeteria and numerous smaller buildings.

NITRATE PLANT WORKING—Operations have been resumed at Salem's fertilizer plant after suspending operations for several months because of a shortage of ammonia. The plant, one of the largest in the West, expects to consume 32 cars of ammonia monthly.

VETERANS' HOME—Reconstruction costing about $325,000 has been started at Camp White Hospital, Medford, for converting it into a domiciliary center for veterans. Paul A. Hatton, manager of the Fort Harrison, Mont., veterans' hospital, will be in charge of the new home, slated for opening on February 1.

PORTLAND TELEPHONE BUILDING—Construction is scheduled to start in January on the $3,500,000 building of the Pacific Telephone & Telegraph Co., Portland. Two years will be required for completion of building and equipping the structure.

NEW PORTLAND INDUSTRIES—Alliance Steel Co. is a new firm specializing in fabrication of steel items. American Pipe & Construction Company has built a $150,000 concrete pipe plant and a steel cylinder fabricating plant. Futur-Craft Mfg. Co. is a new firm producing juvenile furniture, toys and novelties. Oregon Bartile Company is a new producer of flat roofing tile. Oregon Livestock Cooperative has begun construction of a $100,000 slaughter house and packing plant at Clackamas. Protective Products Co. is a new affiliate of Zehrung Chemical Co., producing anti-freeze compound. Shell Oil Company is spending $800,000 on expansion of present facilities at Willbridge Terminal. Triangle Milling Co. is spending $25,000 on a four-story addition to house new milling and processing machinery.

## UTAH

FIRST COMMERCIAL OIL—An oil well flowing at the rate of 287 barrels per day has been brought in by Equity Oil Company at their Ashley Valley No. 1 in eastern Utah, the first well to produce in commercial quantities in the state. J. L. Dougan is president and general manager of the company.

NEW RADIO STATION—Utah's newest radio station went on the air Labor Day. It is Station KPST, located in the Cache valley, with remote control stations in Logan and in Montpelier. The main station and tower are at Preston. J. L. Peterson is president of the corporation, known as Voice of the Rockies, and Al Biorge is general manager.

## WASHINGTON

BUSINESS CENTER AT RICHLAND—Negotiations were completed recently for construction of the first business building at a cost of $75,000, in Richland. To be built on government-owned property, the structure will house the Richland Electric and Furniture Company. F. K. Wilson is president of the new firm.

TWO MORE POWER PLANTS SOLD—Puget Sound Power and Light Company has completed arrangements for the sale of two more of its "fringe" properties, as part of a disposal program covering recent months. Grays Harbor Public Utility District has purchased properties in that area for $1,024,000 plus the value of accounts receivable, while Lewis County Public Utility District closed a similar deal for $2,709,000.

TRAILER VILLAGE TAKES SHAPE—Assembly line production of trailer shelters has resulted in the mushrooming of a new community at North Richland, near the atomic power project, at the rate of 60 new structures a day. Don L. Cooney, Inc., Seattle, holds the contract for 2,200 trailer shelters to be used by employees of the Hanford works. One million board feet of lumber are going into the job, as well as 1,000,000 sq. ft. of roofing and 10 tons of nails.

ORE FOR THE ORIENT—China Mutual Importing Company, Seattle, has negotiated for the sale of 250,000 tons of iron ore to be shipped to Japan. The ore will be taken from Texada Island, 65 miles north of Vancouver, B. C.

PLYWOOD FIRMS MERGE—Approval of stockholders has been obtained for merger of the Bellingham Plywood Corp. into the Washington Veneer Company. When consummated the merger will give Washington Veneer Co. plants in Washington and Oregon with a total annual production of 276,000,000 sq. ft. of plywood.

RETIREMENT PLANT—Washington Water Power Company has instituted an employee retirement plan that will cost the company $3,500,000 in the next 10 years, according to J. E. Royer, vice-president and general manager. The company is standing the entire cost.

ANACORTES CHROME PLANT—A long-term lease on the Anacortes Ship Harbor Industrial site has been signed by American Chrome & Magnesium Industries, Inc., where it is planned to erect plants for chrome beneficiating and briquetting. The firm controls about 4,000 acres of rich mineral deposits in Whatcom and Skagit counties.

ADDS MACHINERY—Van Vetter Metal Fabricators, Inc., Seattle, have recently added a new Model 410-D Chicago steel press brake to their facilities. The firm manufactures items of stainless steel, monel metal, aluminum and mild steel.

*(Continued on page 80)*


GEARED THREADER *designed for* EASY HANDLING

**RIDGID No. 4P gives perfect threads on 2½" to 4" pipe**

• The 4P is designed for fast accurate threading with a minimum of muscle fag for you. Loop handles make it easy to pick up, carry, put on pipe, even when you're tired and it's greasy. You quickly set mistake-proof plate type workholder to size *before putting it on pipe.* Only one screw to tighten—no bushings to fuss with and lose. Gear is enclosed, safe, dirt-proof. Ratchet handle furnished; RIDGID universal drive shaft available for power drive. The RIDGID 4P is a real work-saver; see it at your Supply House . . . soon.

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Automobiles, Business Machines, Household Appliances, Cans, Toys and the many other types of products made of metal exert their appeal largely through their surface finish. How to make that finish attractive and lasting is one major production problem. How to apply such a finish faster for greater output is another problem.

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## THE WEST ON ITS WAY

CEMENT PLANT ENLARGED—Contract for the foundation work of the Lehigh Portland Cement Company's expansion project has been awarded to Henry George & Sons, Spokane contractors, while the steel buildings' erection has been contracted to the Empire Steel Company of Spokane. The new construction is expected to double the plant's capacity.

NEW STEEL INGOT PLANT—A plant to manufacture steel ingots for auto body sheets, which will cost $250,000 and employ about 50 persons, is being constructed on 11 acres bought and 10 acres leased from the Port of Tacoma, it was announced by Eugene F. Cunningham, vice president of the American Manufacturing Co. The plant, as yet unnamed, will be in operation early in September.

GYPSUM PLANT PLANNED—Columbia Gypsum Products Co. have obtained special permit from the county planning board to build a gypsum plant in the Greenacres district. Company officials said ultimate plant development will require an area of 200 acres and investment of $600,000, with 150 persons on the payroll.

MINE ADDS PLANT—Pend Oreille Mines, Metaline Falls, has plans for construction of a 2,400-ton plant for treating lead and zinc ore.

NEW HARDWOOD FIRM—Palanan Bay Lumber Company was recently incorporated in Washington for $5,000,000, to engage in importing and processing mahogany and other hardwoods from Luzon, Philippine Republic. Plans call for establishing processing plants on the West Coast, as well as two or three mills on Luzon.

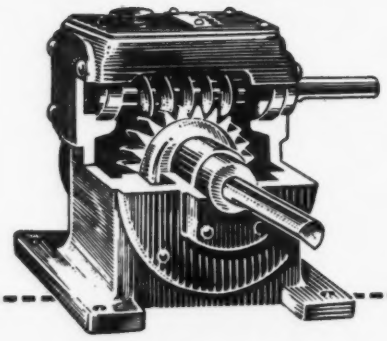
YAKIMA GRAPE DEAL—Welch Grape Juice Company has negotiated an agreement with the Yakima Valley Grape Growers Association to take over processing and marketing of their entire 1948 production. Both the Association plant and the Highland-Stanford plant, at Grandview, will be used by Welch.

HUGE EXPANSION PROGRAM—Facilities of Shell Oil Company throughout the Pacific Northwest will be greatly expanded by a $3,000,000 program recently announced by J. E. Pendergast, Seattle manager for Shell. Largest single project is enlargement of Shell's Harbor Island Terminal; other projects are slated for Spokane, Tacoma, Yakima and Aberdeen, as well as in Oregon and Idaho.

SHIP REPAIR FOR TACOMA—Commercial Ship Repair, of Seattle and Winslow, has established new facilities at Tacoma, under general management of Barney Trout.


**EBERHARDT-DENVER**

★ **GEARS and SPEED REDUCERS** ★



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PLYWOOD OPERATIONS COMMENCED—A new small plywood plant has taken over part of the former site of the Henry McCleary Timber Co. in Olympia. The new plant, which started operations in July, is named the Hardel Plywood Company, with Harold Smith president.

FIRE HITS WAPATO PLANT—Damage exceeding $300,000 was done by a fire which destroyed the Big Y cold storage and packing plant in Wapato owned by L. O. Cockrill, general manager of the Yakima Fruit Growers' Association. The fire started near a company truck unloading fruit at the packing shed, ignited packing shed oil barrels, eventually completely destroying the shed. Total extent of damage to other parts of the plant was not assessed, although officials hoped to salvage the compressor and other engine room machinery.

## WYOMING

MAJOR OIL LEASES—Union Oil Company of California is reported to have secured leases on 250,000 acres in Crook, Weston and Campbell counties, while the Continental Oil Company has taken leases in a checkerboard spread of 270,000 acres in Converse. Niobrara and Campbell counties.


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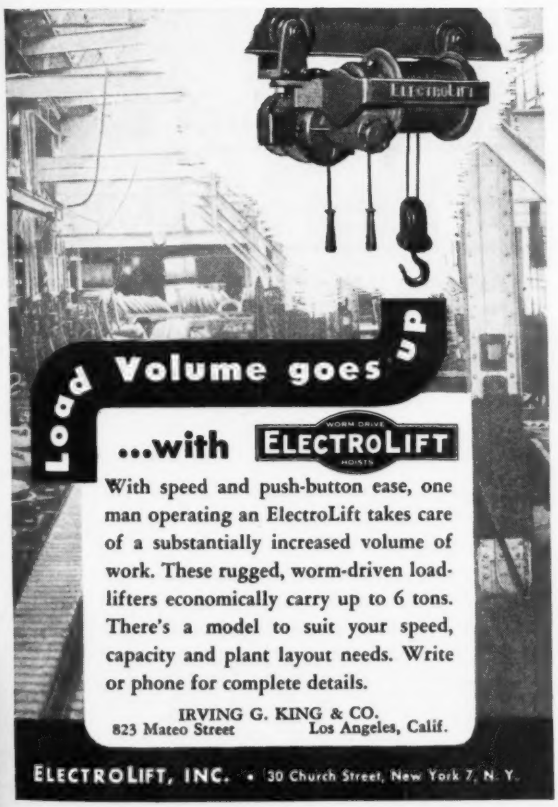
Load Volume goes UP
...with ELECTROLIFT
WORM DRIVE HOISTS
With speed and push-button ease, one man operating an ElectroLift takes care of a substantially increased volume of work. These rugged, worm-driven load-lifters economically carry up to 6 tons. There's a model to suit your speed, capacity and plant layout needs. Write or phone for complete details.
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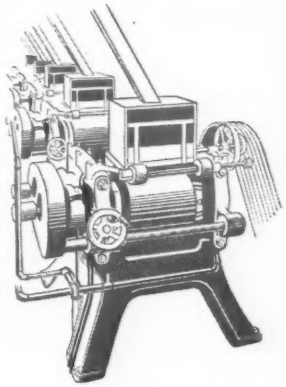
# In 15 months Farval pays for itself in power savings alone



FARVAL—*Studies in Centralized Lubrication No. 103*

IN one of the plants where a well-known breakfast cereal is prepared, Farval was installed on a battery of ten flaking mills. By comparison with ten identical mills which were lubricated by hand, it was possible to measure immediately the benefits of automatic centralized lubrication.

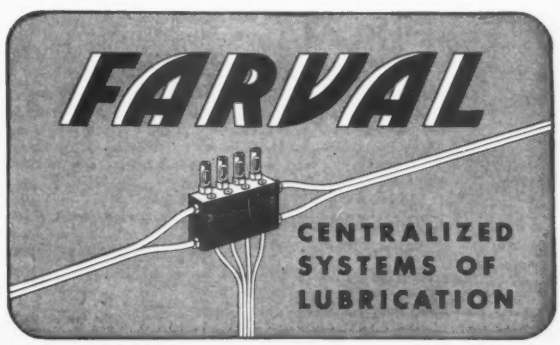
A group of ten mills is handled by one operator per 8-hour shift, and there are three shifts per day. It takes two hours per shift to keep 10 machines oiled by hand. With Farval fully automatic lubrication six hours of oiling time are saved each day.

A careful record was kept of the 10 Farval-equipped mills and it was found that the savings in power alone would pay for the complete Farval installation in 15 months. Adequate lubrication with Farval has reduced bearing replacement to the vanishing point. Even more important, it has increased machine production by eliminating shutdowns for repairs. Now Farval systems are going in on additional flaking mills.

Farval delivers oil or grease under pressure to a group of bearings from one central station, in exact quantities, as often as desired. It does its work while the machine is in operation. Farval—the Dualine System with the Positive Piston Displacement Valve—that has but 2 Moving Parts—is Fully Automatic—and with a Tell-tale indicator at each bearing to show the job is done.

Savings comparable to the above can be made on your equipment with Farval. Write for Bulletin 25. The Farval Corporation, 3269 East 80th Street, Cleveland 4, O.

*Western Offices: Seattle, San Francisco, Los Angeles.*



# WESTERN TRADE WINDS

## NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

**W. C. Souder** has been selected to head the San Francisco district office of Chemical Coal Sales division of United States Steel Company of Delaware. Similar offices were recently opened in Cleveland and Chicago. Coal chemicals are produced in the West at the Geneva Steel Company plants at Geneva and Ironton, Utah.

**John Torrey** has been appointed general sales manager of Avery Adhesive Label Corp., of Monrovia, Calif. He was formerly president of Lennan Lights, Inc., and was also associated with Erwin Wasey & Co., advertising firm.

**Barry G. Wagner** has joined the industrial sales division of Bethlehem Steel Company, Shipbuilding division, San Francisco. He was formerly in the wholesale equipment business.

**Blynn B. Beck** is the new manager of the Western sales and service headquarters of Pitney-Bowes, Inc., at San Francisco.

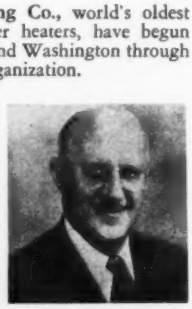
**Will R. Golden** is named Pacific coast sales manager for National Match Book Advertising, Inc., with offices in Hollywood. The firm was recently organized to handle advertising space for match books.

**Charles F. Coates** is in charge of the new Los Angeles sales office and warehouse of J. H. Williams & Co., Buffalo, N. Y., manufacturers of drop forgings and drop forged tools.

**Howard Burt & Sons,** 725 Second St., San Francisco, are the new sales and service representatives for Lewis-Shepard Products, Inc., in Northern California, with a complete line of powered and hand-operated materials handling equipment.

**Fowler Manufacturing Co.,** world's oldest makers of electric water heaters, have begun distribution in Oregon and Washington through the Nash-Kelvinator organization.

**Edwin J. Heimer,** formerly president of Barrett - Cravens Co., Chicago materials handling equipment manufacturers, has moved to San Francisco as vice-president in charge of Western activities for Clapp & Poliak, Inc., exposition management firm.



**Philip Fennelly** is the new Northwest representative for Pioneer Rubber Mills, San Francisco, with offices at 400 S.W. First Ave., Portland. He was formerly sales manager for Huntington Rubber Mills, Portland.

**Tay-Holbrook Company,** San Francisco, and **Howard Supply Co.,** Oakland, are among the new stocking jobbers for the H. K. Porter Co., Inc., line of lubricated plug valves. In the Los Angeles area, stocking jobbers include Commander Engr. & Supply Co., Hickey Pipe & Supply Co., Howard Supply Co., and Neal Supply Co.

**A. F. "Bert" Neumann** is the new sales promotional manager for the San Francisco division of Carpenter Paper Company.

**Frank Castanette** has been appointed Northwest representative for the New York Belting & Packing Co., with headquarters in Portland.

**William G. Hathaway** and **Stephen Thurlow** have been appointed Pacific Northwest representatives for the Hertner Electric Co., of Cleveland. Their headquarters is at 1550 First Ave. So., Seattle.

**Arthur R. Burch,** former West Coast engineer, has been named Western regional manager for The Bassick Co., manufacturers of casters, furniture trimmings and automobile hardware.

**W. J. Hennessy, J. W. Ditewig** and **R. H. Priest** are partners in the Seaboard Machinery Co., Los Angeles, West Coast representatives for

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**made with many different**
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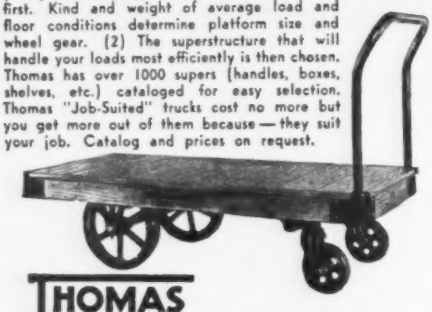
How Thomas men help you "Job-Suit" trucks for your particular purpose: (1) Chassis is selected first. Kind and weight of average load and floor conditions determine platform size and wheel gear. (2) The superstructure that will handle your loads most efficiently is then chosen. Thomas has over 1000 supers (handles, boxes, shelves, etc.) cataloged for easy selection. Thomas "Job-Suited" trucks cost no more but you get more out of them because — they suit your job. Catalog and prices on request.



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Series 3400 hardwood platform truck with round corners. Made in 10 sizes. Illustrated above with type A superstructure. Tubular steel push handle 40" above floor. Moulded-on rubber tired wheels, Hyatt bearings. Thomas makes many other types of 2 and 4 wheel trucks, casters and wheels. Write for catalog

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READ about the low-cost Oakite steam-detergent way to clean metal parts that are too large for soak-tank or machine-washing. This new, FREE 8-page Oakite Service Report gives you the facts! It shows how the triple-cleaning action of mechanical pressure, heat and the detergency of Oakite cleaners make quick work of penetrating and removing oil, grease and other surface soils. Tells how this speedy Oakite method saves you time and money cleaning floors and walls; degreasing heavy equipment; stripping paint. For your FREE copy send a request to . . .

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*Specialized Industrial Cleaning*

Lester-Phoenix, Inc., Cleveland manufacturers of injection molding machinery for plastics and light metals.

Two recent appointments by the Fruehauf Trailer Company are **Patrick C. Halloran** to the post of San Francisco branch sales manager, and **S. K. Porter,** named plant manager of Fruehauf's Los Angeles factory.

**John H. Maddox** has been appointed the San Francisco representative of Ideal Industries, Inc., with headquarters at 444 Market St. He will serve the northern part of California.

**Campbell & George Co.,** 379 Brannan St., San Francisco, have been appointed sales agency for the Trac Troly, electrical conductor system for cranes, monorails and power tools manufactured by Benbow Mfg. Co., Redwood City.

**Acme Steel Company** is occupying new offices and warehouse in Portland at 2044 N.W. Pettygrove St.

**Edward E. Lacy** is the new manager of the Butte, Montana, office of the Westinghouse Electric Corporation.

**Corliss A. Bercaw** has succeeded to the post of Pacific Coast regional manager of the Electro-Motive division, General Motors Corporation, vacated by the retirement of **Ernest Kuehn.** The latter is remaining in an advisory capacity until January 1.

**John H. Bailor** named resident sales engineer for the General Electric Company in Reno. He was formerly with the sales and engineering divisions in San Francisco.

**Owen D. (Jack) Safford** is the new Bay Area cargo sales supervisor for American Airlines.

**William H. Maloney** has been named manager of the Los Angeles branch sales office of the Blackmer Pump Company, Grand Rapids, Mich. The Los Angeles office has recently moved from 415 S. Central Ave. to 736 East Washington Blvd.

**Roger C. Scott,** specialist in hoisting equipment, and a veteran employee of Yale & Towne Manufacturing Co., Philadelphia division, has been appointed to the field activities department at Yale, with the specific assignment of helping industries and mill supply houses throughout Montana, Wyoming, Colorado and New Mexico. His headquarters will be 2911 First Ave., So., Seattle.

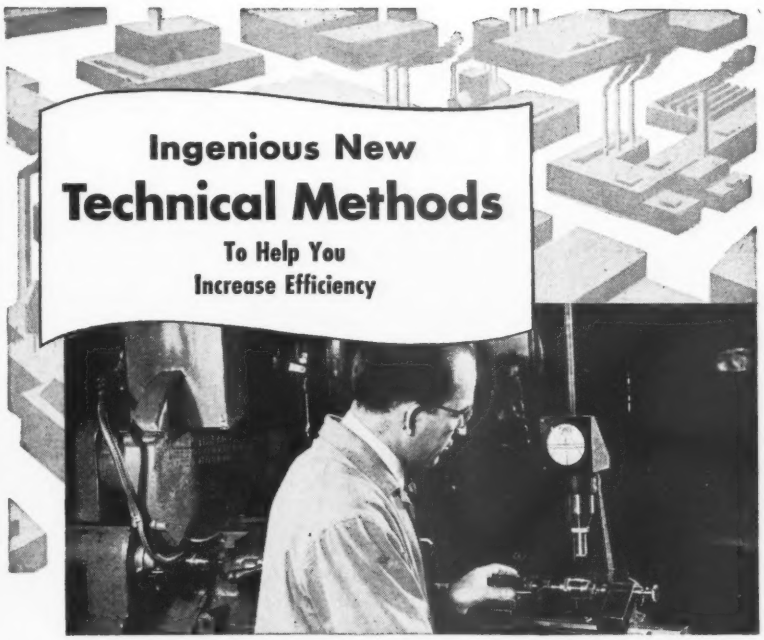
**William C. Derry** of Chicago has been appointed to the post of lumber purchasing agent at Seattle, filling the vacancy occasioned by retirement of **Thomas S. Brennan,** a veteran of 37 years with the road. Mr. Derry himself has been with the Santa Fe since 1925, the last 14 years in the lumber section of the purchasing department.

**Henry Y. Satterlee,** a specialist in engineering, aviation and sales promotion, has joined the sales engineering staff of Cannon Electric Development Company, Los Angeles.

**Theodore H. Gray,** formerly with Westinghouse Research Laboratories at East Pittsburgh, Pa., has joined the staff of Metallurgical Engineers, Inc., firm serving the metal working industries in the Portland area. A native of Portland, Mr. Gray will act as a consulting metallurgist.

**James Turek, Jr.,** Hollywood, has been appointed a Western representative for the industrial sales division of A. E. Staley Manufacturing Co., Decatur, Ill. He was formerly with Stein Hall Co., Inc., New York.

Agaloy Tubing Company of Springfield, Ohio, announce the appointment of **I. F. Pohlmeyer,** 170 So. Beverly Drive, Beverly Hills, as representative of their company in southern California


## Light Projector Increases Thread Grinding Production

**Production of thread grinding machines** can now be increased through the use of a light projecting device called the Thread Pick-up Projector. The thread profile appears in a viewing screen, magnified 20 times, thereby permitting accurate visual adjustments.

**In operation the Thread Pick-up Projector** is placed alongside the thread grinding machine. A Dalzen Thread Grinder, Model No. 1, is shown above. While the machine is grinding the thread, the operator, using the Light Pick-up Projector, adjusts a "dog" on the next piece to be ground. When the "dog" and piece are then placed in the thread grinder the thread profile is automatically in location and ready for grinding immediately.

**Even the most inexperienced personnel** can "pick up the thread" using this instrument after only a few minutes demonstration. Grinding is also done more accurately and the viewer permits measurements of reliefs, notches, etc. to .0005 inch.

**Efficiency of production** can also be increased through the use of chewing gum. The act of chewing helps relieve nervous tension and seems to make the work go easier and faster. For these reasons, Wrigley's Spearmint Chewing Gum is being made available more and more by plant owners everywhere.

*Complete details may be obtained from*
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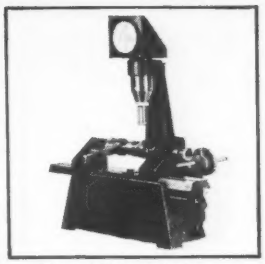


Thread Pick-up Projector

AC-75

# NEW METHODS, MATERIALS, EQUIPMENT

## That Will Help to Cut Your Production Costs

826

### Baker Designs New Light-Weight Truck

Operators of plants having narrow aisles or limited floor capacity will be interested in a new light-weight, low-priced fork truck now in production by the Industrial Truck division of the Baker-Raulang Co., Cleveland, Ohio. The FRH-20 has center control and is battery operated. Truck itself weighs but 3,850 pounds, and has a 2,000-pound capacity. Tests with pilot models show that the unit can make a right-angle turn in 76½ inches plus length of load. The battery is rated at 10 to 11 hours of average use, and an automatic recharging system needs no attention other than occasional addition of battery water.

827

### Welding Tip Cleaners In New Type Case

The average welder's pants pockets usually contain as large and varied an assortment of objects as the pockets of a small boy. Instead of marbles, chalk or live frogs, the welder's pockets usually carry his car keys, pocket knife, flexible rule, marking chalk—and a set of Thermo Tip Cleaners in a metal case. The Thermacote Co., Los Angeles, has recently re-designed the case to make it smaller and lighter for ease in carrying. The Thermo Tip Cleaners have also been re-designed with increased space between the cleaning ridges so that carbon is removed without scratching the tip orifice.

828

### New Diesel Engine Lube Oil Cuts Maintenance

Successful conclusion of exhaustive field tests of a new product, "RPM Delo Supercharged Lubricating Oil" for diesel engines, has been announced by the Standard Oil Company of California. The new oil, developed by California Research Corp., Standard of California subsidiary, is reported to have been successful in greatly extending the period between engine overhauls which have been undesirably short in certain areas where high sulphur fuels are used and under certain conditions of extremely severe operation. Tests showed that running time between oil changes was extended to double the period formerly used in a number of cases.

829

### Electronic Stevedore Speeds Cargo Handling

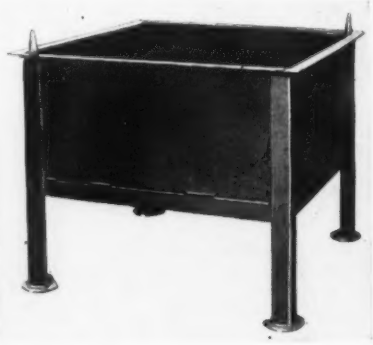
A revolutionary overhead monorail system for loading and unloading ships by means of electronically-controlled carriers has been developed by the Trenton Marine Service Corp., New York. The unique feature of the system is that the carriers are controlled from a central dispatching center by raio impulses. This eliminates the maze of wiring that would be required for more conventional types of control. Adjustable booms carrying monorails, with compensating devices for variations in tide, freeboard and hatch locations, can be swung into place over vessel hatches. A crew loads the carrier and turns over control to the central dispatcher, who then routes it to its proper destination to be unloaded. Switching is also electrically handled. According to the designers, this type of electronic steveore can increase the tonnage handling potential of a port terminal by 30 per cent while eliminating many of the less desirable features of present methods.

830

### Mechanical Holder For Small Tools

A new development by Kennametal, Inc., Latrobe, Pa., brings the recognized advantages of mechanical holding to smaller size tools than heretofore—those having shanks ½, ⅝, ¾ and 1 inch square. These tools, designated "Kendex," feature a flat tip held to a steel shank with a countersunk flat-head cap screw and socket nut. Tips are made in four shapes, square, round, triangular and pentagonal, of which the latter is illustrated. The round tips are regularly furnished in grade K6 Kennametal, primarily for use in machining cast iron. The other tip styles are furnished in grades K6 or K3H, suitable for machining steel, cast iron and other metals. Tips may be rotated to provide a succession of cutting edges and when all have become dull, tips may then be discarded, thus eliminating grinding.

831



### Square Stacking Box Aids Parts Handling

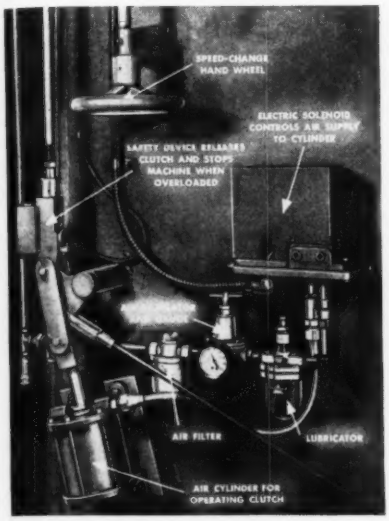
Manufacture of a new type stacking box for handling miscellaneous parts is announced by the Palmer-Shile Co., Detroit. The box is of all-steel welded construction, and has a four-way entrance with a corrugated bottom. Support is by four angle legs with shoes for floor protection. Construction permits stacking any way. Boxes are built to any size required by customer.

832

## Cut-Away Motors For Field Demonstrations

U. S. Electrical Motors, Inc., Los Angeles, believe that the operator out in the field can judge a motor's performance more readily from watching it work than from a printed brochure. Therefore, they are now operating a fleet of station wagons equipped with a minimum of five actual electrical motors that can get to the most remote places where such equipment is used. The motors have sections cut away and cased with lucite so that internal mechanism can be demonstrated by the sales engineer.

833


SPEED-CHANGE HAND WHEEL
ELECTRIC SOLENOID CONTROLS AIR SUPPLY TO CYLINDER
SAFETY DEVICE RELEASES CLUTCH AND STOPS MACHINE WHEN OVERLOADED
AIR FILTER
LUBRICATOR
AIR CYLINDER FOR OPERATING CLUTCH

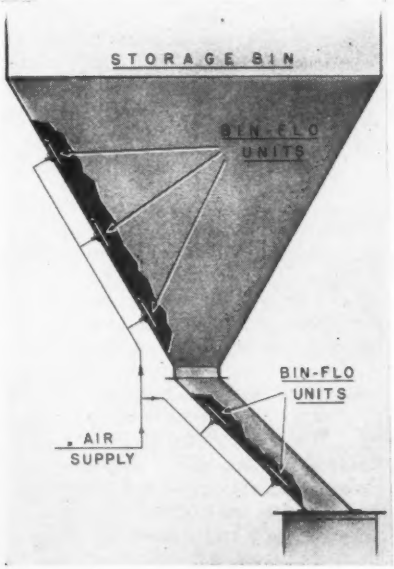
## Air-Electric Control For Steelweld Presses

Air-electric control has been adopted as an optional feature available for all Steelweld Presses manufactured by the Cleveland Crane & Engineering Company, Wickliffe, Ohio. With this control an air cylinder does the work of throwing the clutch which ordinarily is done by a mechanical foot-operated treadle. The air cylinder may be actuated by hand button, foot switch or various combinations of both. Control is designed to ease the operator's work and speed production on large orders of duplicate parts.

834

## New Device Controls Bulk Materials

An economical solution to the problem of overcoming restriction and stoppage of bulk materials in bins and chutes has been designed by the Bin-Dicator Company, Detroit. It is a new aerating device called the "Bin-Flo," and consists of small plates which are readily located at points where flow is restricted. Low-pressure air is injected into the material through a special fabric diffuser, causing the material to flow freely. Manufacturer claims that the Bin-Flo will not plug up even with the most finely ground material. Models are provided for thin-walled bins and chutes, as well as for concrete and other thick-walled hoppers.




835

## Full-Load Conveyors Save Floor Space

A new type of conveyor known as the Harris system has been designed by the United Welding & Mfg. Co., Los Angeles, for use in the food processing industry. Through its use, manufacturer claims, 100 per cent of rated can or bottle capacity of pasteurizers, coolers and exhausters can be achieved. Basis for the system is a grid floor, alternated with a walking beam grid. The walking beam raises slightly, picks up the entire load, moves forward about three inches and returns to its original position. Pusher bars, guides, chains or long moving belts are eliminated, and since entire load moves at one time, damage to product or containers is avoided. All working parts and grease points are outside the processing area.

836

## Aluminum Auto Storage Rack

Automobile storage racks made entirely of aluminum, which they feel will supplant the trailer for light hauling, are being built by Seidelhuber Iron & Bronze Works, Inc., of Seattle. "Auto-Lugger" is the name given the innovation, and the inventor is M. C. E. Burkey.

Mounted on the car it has a capacity of 300 pounds, limited by the capacity of the car springs. The load rides easily without interfering with vision, automobile clearance, or car maneuverability. Its low broad design brings the structure below the air stream of most automobiles.

In the dismounted position it facilitates loading of awkward articles, appliances, boats, etc., or it can be used as sleeping quarters for hunters, fishermen, and skiers. Weighing only 46 pounds, it is completely collapsible for easy compact storage when not in use and man be mounted on the car within five minutes.

837

## Plastic Masks Protect Industrial Workers

G-S Protective Masks, which consist of a plastic shield, held in position by an adjustable elastic headband, and replacable laminated filters of extra thickness, protect throat, nose and bronchial tubes from irritating, but non-toxic dusts, weigh less than ½ ounce, are for foundry, mill, factory use. General Scientific Equipment Co., Philadelphia, Pa.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# Reading Guide For Western Management

***A service for all management levels . . . current literature surveyed and appraised by the faculty of the School of Management, Golden Gate College***

## American Municipal Government & Administration

By Stuart A. MacCorkle. D. C. Heath & Co., Boston, 1948. $4.25.

The governmental and administrative problems of the city are highlighted in this new book in which the author makes an "effort to give a general introduction to the all-important subject of the methods by which more than half the people in America are being governed in their local communities."

His approach seems sound and avoids the usual functional approach (taxation, public utilities, public health, etc.) found in many of the well-known books on this subject. The author has a lucid style which is essential in technical writing.

The book is divided into 27 chapters which include the development of city government; the relationship between the city, state, and nation; political parties and the electorate; an excellent chapter on pressure groups and public opinion; the electoral process; the city council, mayor, and city manager; and the different forms of city government.

The last half of the book is concerned with administration. In the reviewer's opinion the discussion on personnel administration is inadequate. The Public Administration Service in Chicago has published a specialized study in this field and reference to this publication in the form of an outline summary would present a more thorough treatment of a very important subject.

The chapters on borrowing and indebtedness, accounting, auditing and reporting are extremely good summaries of complex administrative functions.

Undoubtedly, Mr. MacCorkle is familiar with more than he indicates in the paragraph relating to work measurement; or, stated another way, the criteria for measuring performance of municipal functions. An increasing amount of material is available and it is believed that more attention should be given this important subject.

The chapter on municipal courts is particularly well-written. The author wisely observes: "The ultimate goals in the administration of justice are perhaps not in sight. In many instances corruption prevails over justice, and in many others our courts are ill-equipped in knowledge and ability to discharge their all-important task. But progress is being made by the legal aid societies . . . bar associations, all aimed toward the day when the courts of every American city will be open and ready to dispense justice to all its people."

Reviewed by:
PETER WEINBERGER
*Public Administration*

## A Trade Union Analysis Of Time Study

By William Gomberg. Science Research Associates, Chicago, 1948. $4.25.

A critique of motion and time study has long been needed. Controversies that have raged over the various techniques employed in this field (for example, speed rating vs. effort rating) have obscured the fact that the validity of the most fundamental premises of the subject may well be questioned.

This the book seeks to do. The author, head of the Management-Engineering Department of the International Ladies' Garment Workers' Union, and a recognized leader in the motion and time study field, has provided a searching and critical analysis of some of the bases on which the subject of motion and time study rests. Dr. Gomberg's method is entirely rational and thought-provoking as he probes the weak spots of the "science" of the subject. One cannot escape the feeling that he is on much more solid ground than those whose contributions he criticizes, and it will be interesting to anticipate the rebuttals that are almost sure to result.

Those who have penetrated into the subject of the book know that it is based on certain "laws" with supplementary "corollaries." Many of these involve relationships in the doing of a task that are not necessarily "technical" to the exclusion of all else. Since motion study is concerned with human motion in industry, it follows that the problems which affect the individual also affect the motions he makes. So Dr. Gomberg uses the book to evaluate these things.

The result is a thought-provoking effort. It is well done in the fine tradition of solid reasoning. It transcends the "trade union" phase of its rather limiting title to provide a unique approach and a fine addition to the all-too-slowly growing collection of factual, meaty books on the general subject of human relations in industry.

Reviewed by:
C. LLOYD THORPE
*Manufacturing & Production Management*

## Introduction to Advertising Principles and Practice

By Thomas E. Maytham. Harper & Brothers, New York, 1948. $6.00.

Professional advertising men and others who "dabble" in advertising will find this book most interesting. Excellent typography and good illustrations make it easy to read. It is written in a clear and highly readable style.

The place of advertising in our social economy is understandably discussed and related to its economies, functions and abuses. Its relation to marketing and marketing research is reviewed. Techniques, fact-finding methods, tabulation and analysis are ably handled.

The HOW of planning and writing the advertisement is worth reading. In this section, one will also be informed HOW to write headlines and good copy.

For those interested in advertising production there is an excellent chapter which explains many interesting and practical techniques, such as typography and printing, as well as plate and printing reproduction.

One may also learn about eleven ways to test advertisements. These are recognition, identification, consumer opinion, coupon, coupon-plus-sales, hidden-offer, mail sales, triple-association, and checklists. Additional tests are also included.

Direct mail advertising comes in for its share of explanation as does point-of-sale material and display. The all-important subjects of product identification, legal requirements and packaging prove valuable and worthy of study.

Mr. Maytham concludes his book with a brief but comprehensive discussion of advertising organizations and how they function.

For beginners or experienced advertising man alike, this book is recommended as excellent reading.

Reviewed by:
JOSEPH A. GILBERT
*Salesmanship & Sales Promotion*

## Briefer Guides From The Management Library

**Executive Compensation in Thirty-nine Industries**

National Industrial Conference Board, Studies in Business Policy, No. 32, August, 1948 (pamphlet).

This study gives the compensation of the three highest-paid executives, in addition to the remuneration of all officers and directors, for 762 companies in thirty-nine industries. It does not attempt to answer the question of the exact amount that should be paid any single executive, but it does provide facts which can serve as guides in the development of proper salary schedules.

**Union Contracts Since the Taft-Hartley Act**

National Industrial Conference Board, Studies in Personnel Policy, No. 94, 1948 (pamphlet).

A Conference Board study which analyzes 313 union contracts and shows what types of contract clauses employers and negotiators are agreeing to under the Taft-Hartley Act.

**Favored Industries in Los Angeles**

By Neff, Baum & Heilman. The Haynes Foundation, 1948 (pamphlet).

This report is a simplified version of a more comprehensive study entitled "Production Cost Trends in Selected Industrial Areas." For more widespread reading it has been condensed and reduced to non-technical language in this publication.

Reviewed by:
BERNA M. CARLSON
*Management Librarian*

# HELPFUL LITERATURE

## For the plant operator who wants to keep informed

2448

**Industrial Ovens Described**—The many designs of industrial ovens built by *J. O. Ross Engineering Corporation* are fully described and photographed in a 23-page catalogue covering such varied types as Lithograph Ovens, Automobile Body Ovens, Armature Bake Ovens, Weld Rod Ovens and conveyor ovens of all types. The booklet tells how ovens are designed to suit different requirements in the method of heating, source of heat, material handling, and the construction of the oven itself, and the company feels this booklet should help to crystallize in your mind how your own oven requirements can be worked out.

2449

**Soot Remover**—*National Aluminate Corporation, Chicago, Illinois,* have recently put on the market a new chemical soot remover in powder form which removes soot from boiler furnaces by lowering the ignition temperature to 775 degrees, where normal furnace temperatures will burn it off. An interesting illustrated abstract covering the research which made possible this new product, Nalco SR-150, is available on request, and should be of interest to plant executives desirous of maintaining clean heat-receiving surfaces within the boiler to insure an uninterrupted flow of heat through removal of the furnace-clogging soot and slag.

2450

**Reynolds Issues New Data Book**—Since aluminum is no longer a single metal but a large family of metals, each with its own peculiar properties, to make an intelligent selection, the user must have definite information as to alloys, tempers, sizes, shapes, physical properties, chemical properties, mechanical properties, and fabricating characteristics. To meet this demand for factual information on aluminum alloys and mill products, *Reynolds Metals Company, Louisville, Kentucky,* has prepared a handy pocket-size 162-page book covering the subjects listed above plus 33 pages of explanatory text covering a wide range of related subjects such as the alloy designation system, the temper designation system, heat-treatable and non-heat-treatable alloys, casting alloys, casting methods and foundry practice. The booklet is available without charge to those engineers, designers and technical men who write on their company letterhead.

2451

**Fresh Air Fans**—Proper ventilation in offices, it is maintained by *The National Association of Fan Manufacturers, Detroit, Michigan,* promotes efficiency; in industry, fresh air removes dusts, cinders and the residue of buffing, sand blasting, dissipates heat from machines. "Fresh Air at the Touch of a Switch" is the name of this little 12-page booklet, which is well-illustrated with lively photographs of the people and places affected by the various ventilation systems, including farms, theaters and stores, as well as industrial plants.

2452

**Bucket Loader Bulletin**—The Nelson Series 10 bucket loaders are made for heavy-duty road work. They come equipped with either pneumatic wheels, for quicker movement, or crawlers, for heavier digging and for operation on soft ground. *The N. P. Nelson Iron Works, Inc., Clifton, N. J.,* who describe them in a new four-page pamphlet, point out that they "pick before they shovel"; feeder has steel teeth that pick material loose from the bank without slugging shocks and quickly heap it in the buckets; the toothed wearing strips are renewable. Both models of loaders handle loose or screened materials up to about three-inch cube, and earth and bank gravel containing up to 15 per cent stones of six-inch cube. Other features include overside Timken bearings, Le Roi 201-inch engine, and Twin Disc clutches with automatic relief clutch on elevator drive.

2453

**Test Your Speed**—There is a best speed of operation of your rotating or traveling equipment to provide uniformity of product, prevent costly equipment failures. *Metron Instrument Co., Denver, Colorado,* have put out a new four-page brochure on their hand tachometers, which cover a wide range of speeds, from 2 to 10,000 rpm. or 20 to 100,000 rpm. with one tachometer and two adapters. They are claimed to be foolproof — undamaged by overspeeding, selection of wrong range, or changing ranges while in operation, and easy to read rapidly and instantly, with a sustained accuracy of 1 per cent not affected by wear, vibration, temperature or humidity conditions. They should be useful for any shop, plant or laboratory's timing operations.

2454

**No More Fire Hazard** from paint spraying operations is encountered when this type of painting is done in a paint Spray Booth as described by *Schmieg Industries, Detroit, Michigan,* in their new 10-page Catalog 480. In the booth, overspray is whisked away in a fast-moving stream of air that travels horizontally from the work into a solid curtain of water that cascades down a perpendicular flood sheet at the back of the booth. The centrifugal pounding action in the washing chamber dislodges the pigment from the air stream, and a second sheet of water, descending down the rear wall, floods the paint into the sludge tank below. Moisture that may still remain is eliminated by a series of baffles, against which the air stream impinges on its upward and outward pats, and clean air only passes through the exhaust fan. The booklet contains several pages of blueprints of actual factory installations, which come in all sizes, diminutive enough to cope with the spraying of small parts and keep overspray off the conveyor monorail wheels and chain, and large enough to take truck and trailer units.

2455

**Verson Die Manual**—A handsome and durably bound new 88-page book has been issued by the *Verson Allsteel Press Company, Chicago, Illinois,* in which over 200 press brake dies are illustrated and described, ranging from simple bending dies to complex gang punching units, with related die types grouped together. Detailed information is presented to simplify tooling up and to help avoid the dangers of misapplication of dies. Also included is useful engineering data for making metal forming calculations and complete details and specifications on Verson Press Brakes. The book's many pages of detailed technical drawings, thoroughly described, should make it an asset to all persons engaged in the forming of metals, to whom it is available without charge.

2456

**Safe Trucking Procedure Explained**—*Allis-Chalmers, Milwaukee, Wisconsin,* have put out a clever little cartoon-illustrated "Trucking Manual." The 20-page pocket-size booklet was designed by the company's tractor division and health and safety department to give their own employees hints on safe intra-plant trucking procedure, but would be worthwhile reading for any plant's employees. The suggestions contained in it cover safe operation of hand, transporter, electric and gas lift trucks. In every instance, operators are instructed to check the truck to see that it is in good condition before using it, and if repairs are necessary, to notify the foreman. The last page carries on one side a memo listing the procedure to be followed for the skillful handling of sick and injured and on the other side is space for notes.

2457

**Radio Catalog** — A 168-page, closely-printed catalog, "Everything in Radio and Electronics," put out by *Allied Radio Corporation, Chicago, Illinois,* covers more than 10,000 items, with special emphasis placed on equipment for industrial maintenance requirements, electronic tubes, transformers, condensers, rheostats, rectifiers, switches, batteries, etc. There are special sections listing public address and intercommunication units for indoor and outdoor requirements, and a section on microphones, speakers and other accessories, as well as a large technical book section covering leading publications on the theoretical and practical aspects of radio, electronics and electricity. Latest disc, wire and tape recorders are listed; record changers, phonographs and all accessories are detailed; and a new line of low-cost television receivers is described as ideal for employee lounges or executive offices. This buying guide is available without charge.

2458

**Caterpillars Described** — A new booklet, "Caterpillar Diesels Go to Town," heralds the application possibilities of Diesel power units: how they provide power for water pumping stations, sewage disposal plants and local industry; how, as Diesel powered tractors and motor graders they build roads and streets and keep them in repair, with snow removal, garbage disposal, parkway and airport improvement among their tasks. The booklet on each page has photographs and descriptions of actual installations in every part of the country, like the one at Big Stone City, South Dakota, which has thereby generated its own electricity since 1941, the two Caterpillar Diesel Electric Sets at Monroe, Utah, which serve as a protection against possible failure of the main units as well as against a seasonal shortage of water power. The booklet is put out by *Caterpillar Tractor Co., Peoria, Illinois.*

2459

**Time Saver Table**—A table published by *West Coast Aero Tool Company, Los Angeles,* makes it possible to determine quickly the number of parts which may be made from a given amount of material, thus speeding machine shop operations and eliminating waste. To use the table it is necessary only to know the length of the part and the width of the cut-off blade to be used; add these together, find that dimension on the table and the number of parts which may be cut from one, 10 or 100 feet is clearly indicated. The table is available on request either in notebook size or as a handy 22x16½-in. wall chart.

2460

**Servit Selector** — *Burndy Engineering Company, New York,* has published "Servit Selector," a bulletin designed as a handy reference to simplify the choice of the correct type of Servit (split-bolt connector) for various conductor combinations. The Burndy Servit, for taps, deadends, service entrance, motor lead and junction box connections is supplied for use with single metals, alloys and combinations of different conductor metals. Copies of the bulletin are available on request.

# Permanente Net Up 75 Per Cent

PERMANENTE Metals Corporation is now producer of 20 per cent of the nation's primary aluminum, has risen to 12 month sales of $69,605,000 and a current net earning rate of $1,000,000 a month, according to Henry J. Kaiser, president. He reported that:

1. Net earnings increased approximately 75 per cent for the last fiscal year to a total of $9,244,338. This was at a rate of $3.55 a share, compared to $2.05 for the preceding year, based on 2,600,000 shares now outstanding. The increase reflected greater production and efficiency achieved from a longer operating period for new plants and the acquisition of new facilities.

2. The report for the quarterly period ending August 31 showed Permanente Metals continuing to strengthen its position, as follows:

From three month net sales totaling $18,463,937, the company showed net profit after taxes of $3,002,396, or $1.15 per share.

Earnings for the last 12 months reached $10,975,000, or $4.21 a share.

Working capital increased in the year from $6,749,000 to $22,598,000, of which $8,100,000 was added July 7 by the company's first public financing.

3. Permanente Metals, turning from wartime production of ships, magnesium, "Permanente Goop" incendiary bomb material, chemicals and refractories, became one of the three producers of primary aluminum in the United States in 1946, at the same time continuing related chemical and refractory divisions.

Aiming at rounding out integration in the aluminum industry, Permanente Metals leased from the government a plant at Baton Rouge, La., that processes bauxite ore into powdered alumina, an aluminum reduction plant and a rolling mill at Spokane, Wash., built its own soda ash plant at Owens Lake, Calif., and bought an aluminum reduction plant for $3,000,000 at Tacoma, Wash.

4. Approximately $5,000,000 of the company's postwar earnings were reinvested in new facilities and improvements, including: $1,000,000 for improvements at the Tacoma plant, $1,200,000 for a dock at Baton Rouge, $1,200,000 for a soda ash plant, $1,000,000 at the rolling mill, and research and testing facilities and explorations for sources of bauxite.

5. Acquisitions of additional facilities and expansions into other products are under way, representing investments exceeding $4,500,000 already provided for in the public financing; including:

Permanente Metals is preparing to enter the aluminum foil field with a mill at Permanente in the San Francisco Bay area to supply foil for packaging, labeling and other industrial uses.

Equipment is being built for an aluminum rod and bar mill, and to meet heavy demands for electric conductor wire from expanding public utilities and other industries, the company is preparing to enter the aluminum wire and cable field.

## Huge Terminal Will Be Built in Seattle

Bids have been invited for construction of a three-story, 480x220-ft. warehouse in the South End industrial area of Seattle, by Seattle Terminals, Inc. According to R. G. Culbertson, president of the firm, the building will be completely mechanized for materials handling. A 60-ft. ceiling will permit high tiering of goods, and in addition to spur track facilities there will be 22 truck loading bays. The track side of the structure will accommodate nine freight cars.

In addition to providing facilities for storage of general merchandise the new building will provide special rooms for storage of bonded goods, rooms equipped for temperature and humidity control, packaging of bulk items in both dry or liquid state, and an employees' restaurant.

Seattle Terminals, Inc., has been established since 1942.


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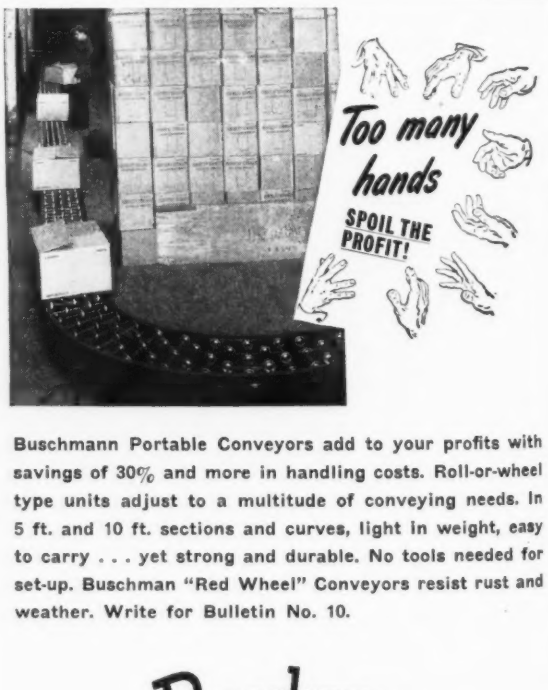


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(Continued from page 52)

### Refueling and Battery Charging

Adequate facilities must be included in the plant layout for charging the batteries of electric trucks or for refueling gas powered trucks. Motor generator sets are available for the former in multiple circuit units and usually the layout will be simplified, and the cost lessened, if charging units having a number of circuits are employed.

Where space is limited, and a large group of trucks must be arranged together in close formation, the trucks may be turned head on and the forks raised so as to overlap.

The refueling stations for gasoline trucks should be located at central points in the plant so as to be convenient for the operators. In large plants where many units are employed, the number of refueling stations must be sufficient to avoid delays for this materials handling equipment.

### Engineers Study Cause And Cure of Cavitation

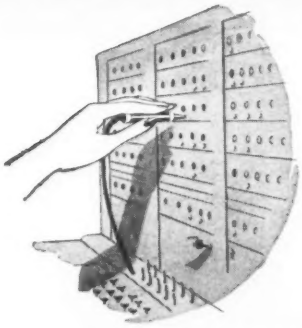
One of the most troublesome causes of wear in hydraulic turbines is cavitation, a phenomenon that has long been known to engineers. Cavitation is the formation of voids within a body of moving water when the pressure is reduced to the vapor pressure of the liquid. The voids become filled with air and water vapor, causing bubbles to form. These bubbles form and collapse rapidly, and result in pitting of the metal parts of the turbine.

Considerable research on causes and prevention of cavitation has been done by the hydraulic turbine department of Allis-Chalmers Mfg. Co., and a series of conferences on the subject have been held with Western engineers in recent months. According to William J. Rheingans, assistant manager of the hydraulic turbine department at Allis-Chalmers, cavitation can be avoided by adjusting the turbine runner setting. When the runner is set too high above tailwater, pressure on the bottom surfaces of the runner buckets falls below the vapor pressure of the water, with resulting cavitation and eventual pitting. By setting the turbine low enough, cavitation can be avoided.

Use of stainless steel has also been found to help, according to Mr. Rheingans. "It has been found that 18-8 stainless steel has about 10 times greater resistance toward pitting than ordinary cast steel," he said. "For that reason, repairs of pitted areas are usually made with stainless steel."

High speed motion pictures of actual cavitation taken at California Institute of Technology show that the bubbles form and collapse in about 0.003 seconds. Each bubble, formed at the rate of 10,000 to 20,000 per second, is 0.3 inches in diameter, and maximum speed of collapse is about 800 feet per second. This produces a pressure of about 50,000 psi at the point of collapse and a resultant pitting of material.


FOR THE RIGHT ANSWER...



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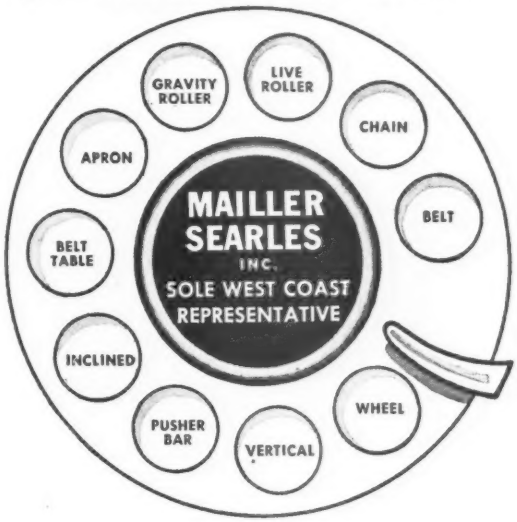


As near as your phone! A call will bring our field engineer to your office or plant . . . a man backed by our home office engineering department to give you the right answer to your package conveyor problems. The findings and recommendations of Mailler Searles engineers will be translated by Alvey, famed ALVEYor* specialists, into an efficient conveyor system, tailored to your needs. Our service, of course, includes installation supervision.

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## THE CONTINENTAL DIVIDE

*(Continued from page 66)*

to market. There are 12 other Wells Lamont plants, including one at McMinnville, Oregon. Some time we'll tell you about some other interesting manufacturing enterprises in Fort Morgan, including one that makes the Wagner ditcher and another that sends its automobile engine valve lifters all over the world.

### Canon City - Florence Junket

Up the Arkansas River from Pueblo 30 or 40 miles is a lush valley with plenty of everything fruit and vegetables, oil and coal, and the thriving towns of Florence and Canon City. Canon City also has the Royal Gorge and the world's highest bridge spanning that stupendous gash through the Rockies. These towns have the urge to attract some new industries, so they chartered an airplane and flew all the way to New England for an "invasion" of five industrial centers with industries that may be getting a bit restive about the prospects of a war. Any of these enterprises that are ripe for a change will find plenty to attract them in the Florence-Canon City area.

The chartered Continental Airlines DC3 carried a display of the region's raw materials, power, acreage, labor, recreational facilities, etc. Advance publicity featured a luscious local girl dressed in one of those Hollywood cowgirl outfits showing plenty of hide and six-gun. The girl didn't make the trip, but a group of the leading businessmen did, and at last reports they were having a lot of good sessions with industrialists at Bridgeport, Hartford, Providence, Boston and Newark.

### Anholt Ashtrays

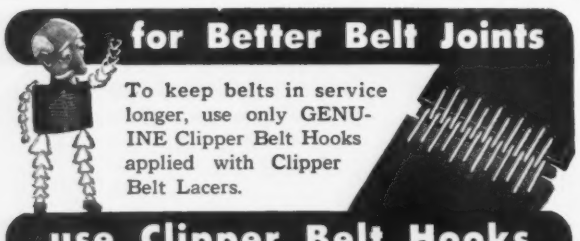
Most cosmopolitan man in the Mountain States is Harry Anholt, suave manager of the Brown Palace Hotel in Denver. Right out of Paris, London and New York —with a manner that would make a headwaiter seem gawky and clumsy—although he came from a little town in Montana and learned all those smooth tricks the hard way. This man runs a big hotel and got sick and tired of having its nice rugs and furniture mutilated by burning cigarettes falling from ashtrays. So he invented an ashtray that outwits the cigarette as well as the cigarette smoker, and keeps the carnage in the tray where it will do nobody any harm. Anholt patented it and lined up a manufacturer, the Coors porcelain plant at Golden, Colorado, to produce the ashtrays in quantity. Now Gene Cervi has joined the business and is on his way east promoting Anholt Ashtrays with a view to getting them a nationwide market.

### Meet Boettcher's Mr. Rydstrom

Denver is in a dither over the arrival of a new prime minister for the Boettcher empire. Arthur G. Rydstrom of New York City, who resigned as a senior vice-president of the tenth largest bank in the United States to take the job with the Boettcher interests, has been appointed to the directorate of half a dozen Boettcher corporations during the past few weeks and is giving them all the once-over.

Charles Boettcher, who died recently at the age of 96, left an enormous financial and industrial organization, including cement companies, beet sugar companies, banks, stores, hotels, etc. Claude K. Boettcher now is the guiding genius for the vast assemblage of holdings, and in bringing in the 42-year-old New Yorker it is evident that the Boettcher family is taking steps to insure continuance of able management.

Rydstrom is considered a progressive young man. It has been a long time since the word "progressive" has been connected with the Boettcher tribe in any way. Just before the recent war, Rydstrom led his Wall Street associates into some large shipbuilding ventures. These proved so timely that he was taken into the government as an advisor to the Navy's top brass, and left at the war's end with a Navy captain's commission. An expert on financing of Western industrial operations, he soon became acquainted with Claude K. Boettcher, who promptly began efforts to woo Rydstrom to the mountain states. The fact that Rydstrom left one of the best jobs in New York's financial district to take the Denver job is considered not only a feather in the Boettcher cap but also an additional proof that (as *Western Industry* would put it) "the West is on its way."

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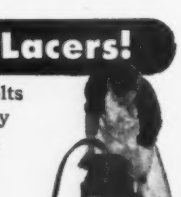


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# The Impaired Worker Is "Good Business"

By MAX D. KOSSORIS
Director, Pacific-Rocky Mountain Region
U. S. Bureau of Labor Statistics

THE reason why we have NEPH week —National Employ the Physically Handicapped Week—is that industry, by and large, will not employ the impaired worker if it can be avoided. The slogan "Hire the handicapped, it's good business," sounds cynical — but it reflects accurately the only practical approach that appeals to management.

Why does industry discriminate against hiring the impaired? A number of reasons may be cited: they are less efficient than their unimpaired co-workers; they are absent more frequently; they lose more time because of illness; they are more likely to get hurt; they are hazards to other workers; they run up workmen's compensation costs; they are less mobile because they cannot be shifted to other jobs as readily as the unimpaired; and finally, they create placement problems.

What are the facts?

### The Survey

A recently completed study by the U. S. Bureau of Labor Statistics, and financed by the Veterans Administration, provides objective facts obtained from industry's own records. The survey covered the experiences of slightly more than 11,000 workers whose impairments were so severe as to constitute serious difficulties in their obtaining employment. They were studied in 109 plants in all parts of the U. S. and in a large variety of manufacturing industries.

In every instance the impaired worker was matched with one or more unimpaired co-worker who did the identical work in the same department of the same plant, under identical conditions, and who was of about the same age and had about the same work experience. The characteristics of the workers in this control group, which totaled over 18,000, were therefore substantially identical with those of the impaired group except for the one factor of impairment. Every other variable was eliminated. In no instance did the survey period of any individual worker cover less than six months of work performance.

The 11,000 impaired workers were found in about 1,500 separate occupations. Even this number understates the number of separate jobs in which impaired workers were encountered because many of them could not be studied — either because the necessary records were not available or because it was impossible to match the impaired worker with an appropriate unimpaired worker.

The 10 basic types of impairments covered in the survey were all of a physical nature, and were selected and defined by a group of outstanding industrial physicians. Briefly, they included the following impairments: orthopedic, vision, hearing, hernia, cardiac, ex-tuberculous, peptic ulcer, diabetic, epileptic, and multiple—that is, more than one of the types cited. Minor impairments within these categories were disregarded. The guiding principle was that the impairment had to be so severe that the applicant would have serious trouble in finding a new job.

The survey covered the years 1945 and 1946, when industry still had many impaired workers on its payrolls. Those were years of a tight labor market, and many employers lowered their hiring barriers because able-bodied workers were not available in sufficient numbers. Many of the impaired workers lost their jobs late in 1946 or in 1947 — partly because employers re-imposed their hiring exclusions and laid off impaired workers in favor of able-bodied ones, or because, during retrenchment and reconversion periods, they trimmed their war-swollen employment to peacetime proportions. The impaired, being the last to be hired, were among the first to be fired.

### General Findings

Coming back to the earlier question, what are the facts about the work performance of the impaired workers? First, some general findings.

1. Contrary to the popular conception that they are employed primarily in custodial types of work — janitors, elevator operators, etc. — only 7 per cent of the survey group fell into this category. Nearly 58 per cent were found in processing jobs of a great variety, 15 per cent were engaged in machine and building maintenance, 1 per cent were working foremen, 6 per cent were in inspection and testing, 4 per cent in recording and control, and about 9 per cent were engaged in moving materials. The survey revealed that practically any job in any plant was potentially a job for an impaired worker of one type or another.

2. The use of an impaired worker on any specific job is an individual problem. Into account must be taken not only the question of the degree to which the impairment handicaps the worker, but also his ability, intelligency, skill, experience, maturity, personality, etc., to meet the requirements of the particular job. This, however, is true

*(Continued on page 92)*

Silicone News

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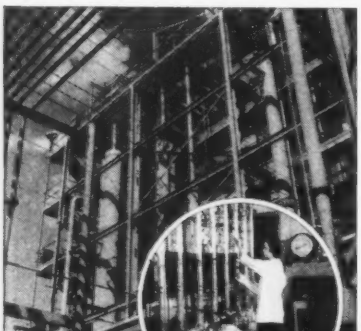
Thanks to the cooperative efforts of hundreds of scientists and engineers in almost every field of industry, we have been able to compile a comprehensive new booklet about DC 200 Fluids.



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The benefits of our years of research and experience in producing DC 200 Fluids and in adapting them to many different applications are made available in booklet No. X-C-13. We hope that you will call on the technical representatives assigned to each of our branch offices for any additional information or assistance.

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FIRST IN SILICONES

*(Continued from page 91)*

of good placement work for the unimpaired worker as well. The impairment is an additional element for consideration. An intelligent placement technique fits a man into the job he is able to do.

The range of occupations in which impaired workers were found included everything from unskilled labor to the most highly skilled machinist. In many cases the impairments did not affect earlier existing skills. In others, new skills had to be learned — some of them of a higher degree than those lost.

3. Impaired persons are more limited than unimpaired workers in possible job assignments. They cannot be transferred as readily from job to job. This limitation, however, is one of degree, depending on the impairment and the requirement of the job. In any one plant, there may be scores of jobs a worker with a specific impairment can perform, and which he can do as readily as any unimpaired worker. This certainly was apparent to the medical and personnel departments of many of the plants studied, because the individual worker's record showed alternative jobs in same or other departments to which he could be assigned. Mobility, then, is a matter that depends not only on the type of impairment involved, but also on the operating problems of the particular plant.

4. The survey disclosed a nearly complete absence of job re-engineering for the impaired. The experience of 109 manufacturing plants clearly indicated that it was not necessary to re-engineer jobs to enable employment of impaired workers.

### Specific Findings

The plants surveyed all had medical records based on physical examinations. Plants without such records could not be studied because it would have been impossible to identify the impaired workers as carefully as the survey required. Such plants, however, also followed fairly intelligent placement practices, even though these varied widely. The following findings, therefore, reflect work experiences of men and women who had been placed at jobs at which their impairments were not handicaps. As indicated earlier, these findings are based on comparisons of impaired and unimpaired workers on identical jobs and identical conditions.

#### 1. Efficiency

The impaired workers were as efficient as the unimpaired workers against whom they were matched. As a group, they held their own very well. In statistical terms, their output was 1 per cent better.

This does not mean, however, that every impaired worker, if sensibly placed, will be better than his unimpaired co-worker. Individual differences are just as common among the impaired as among the unimpaired. Some of them had poor records. Others, on the other hand, had excellent records. But so did the unimpaired workers with whom they were matched. For the group as a whole, 40 per cent of the impaired were as good, 33 per cent were better, and only 27 per cent were poorer. In other words, nearly three-fourths of the impaired workers *were as good or better than the unimpaired.*

#### 2. Absenteeism

The absenteeism records of the two groups were nearly the same. Defining an absence as a failure to show up for work during a full day when the employee was scheduled to work, the 11,000 impaired workers averaged 3.8 days lost per 100 scheduled work days, against 3.4 days for the over 18,000 unimpaired workers matched with them. This amounts to about one more day a year, and consequently may be regarded as insignificant.

An analysis of the reasons given for absence in plants which recorded them indicated that the distribution of reasons for absence was substantially the same for the two groups. If the impairments exercised any influence, it must have been a very limited one.

#### 3. Work Injuries

The disabling injury experience of the impaired was better than that of the unimpaired group. The injury frequency rate per million exposure hours was 8.9 for the impaired, as against 9.5 for the unimpaired with both groups working under identical work hazards.

Only one instance was found among the 174 disabling injuries to impaired workers in which the injury was definitely due to the impairment. But the fault for this was with the foreman, who through an oversight, had assigned the man to one of the few jobs in the shop he was not supposed to perform.

Not a single instance was found in which the injury resulted in permanent total disability when superimposed on the existing disability. Nor was any instance found, either from the data or within the experience of management, in which the impairment could be blamed for an injury to a fellow worker. The findings of the survey indicate clearly that there is no reason to believe that the existence of an impairment will cause work injuries if the impaired worker is properly placed.

Nor is there reason to believe that, with proper placement, the disability resulting from disabling injuries will be more severe. For the impaired group, the average length of disability per injury was 14.5 days. For the control group, the average was 14.9 days.

The survey also disclosed that the types of injuries involved depended on the type of work performed, and had no relation to the impairment. If cuts or abrasions or burns were numerous among the impaired group, they were proportionately just as frequent among the unimpaired.

Safety engineers tell us that a study of non-disabling injuries is perhaps more important than a study of disabling injuries: (1) they occur more frequently and therefore offer more cases for study, and (2)

the cause of any non-disabling injury is a potential cause of a disabling injury.

The non-disabling injury rates for the two groups were identical—9.9 per 10,000 exposure hours, or 990 per million hours. Clearly, there was no special proneness on the part of the impaired toward minor injuries. Here, too, the survey provides a measure of the severity of this type of injuries by indicating the average number of redressings per injury; 0.9 for each group. Again the experiences were identical.

As in the case of disabling injuries, the types of minor injuries were directly related to job hazards, were the same for both groups, and showed no relation at all to existing impairments.

4. The similarity of the two groups was further illustrated by their non-industrial use of medical facilities. This was measured in terms of plant dispensary visits for treatment of illness or injury not related to employment. Both groups averaged 1.5 visits per person during the period studied. While not much significance can be attached to the figure itself, with practices between plants varying widely, the important fact is the similarity between the two groups.

### 5. Labor Turnover

Finally, there is the matter of labor turnover. Those who urge the employment of the impaired worker frequently insist that he is, on the average, a steadier worker; that because he has greater difficulty in finding a job, he tries harder to hang on to it.

Unfortunately, this is one question to which the survey does not supply a reliable answer. A follow-up in 68 of the plants studied provided separation rates during the six-month period following the end of the survey period. Data were obtained on 5,217 impaired and 8,723 unimpaired workers of the original survey group.

The figures disclosed that the impaired workers had higher termination and voluntary quit rates than the unimpaired. Their termination rate of 5.2 as against 3.1 for the unimpaired was easy to understand. As explained earlier, many companies reimposed their prewar exclusion policies. Furthermore, being the last to be hired, the impaired had low seniority rankings and consequently were among the first to be laid off.

The voluntary quit rate of 3.6 against that of 2.6 of the unimpaired represents less of a difference. Nevertheless, the rate for the impaired is the higher of the two. The reasons for this, however, are not hard to understand when we bear in mind that the period during which these rates were gathered — winter of 1946 and spring of 1947 — was one of reconversion for many plants. Many of the impaired, seeing what was happening elsewhere and anticipating lay-offs, looked for other jobs, and found them. Many of them now had something to sell they did not have before — some special skill.

### Conclusion

It would be possible to talk about a great many other interesting points the survey brought out, such as the prevalence of exclusion policies, performance differences and similarities between the various types of impairments, the types of jobs from which the individual types of impaired were found to be excluded, the different placement policies, etc.

But the *basic finding*, which is apparent in nearly every measure applied to the performance of impaired workers vs. that of unimpaired workers, *is the similarity of the performance of the two groups*. When placed on the basis of what he is able to do, the impaired worker is as good, and in some respects better, than the unimpaired worker operating under identical conditions. That should cause no surprise, because if the impairment does not affect job performance, it represents the absence of an ability which the job does not require. For example, a one-legged man is every bit as good as a two-legged man for a bench job that requires two good hands and good eyesight. The lack of a leg has no bearing on the ability of the impaired worker to perform satisfactorily.

It was stated at the outset that the slogan "Hire the handicapped, it's good business" was a cynical one. It is that because it assumes that industry will listen only to profit considerations. While no one will deny that business men are capable of hu-

*(Concluded on page 94)*


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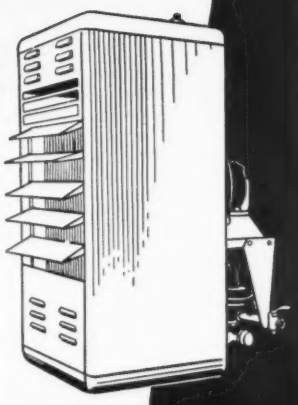

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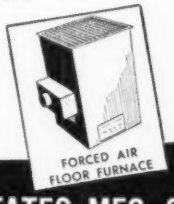

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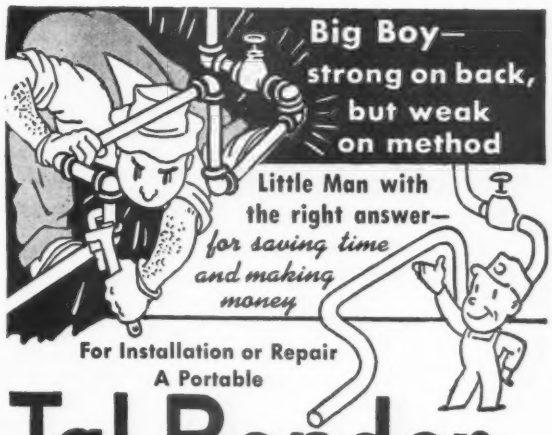


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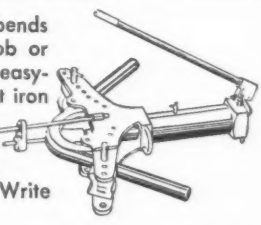

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*(Concluded from page 93)*

manitarian considerations, there is no reason why they should not regard the employment of the impaired from a strictly dollars-and-cents point of view. The facts are clearly in favor of the impaired if the employer will place them sensibly — with the emphasis on what they can do, rather than insisting that the man to be hired to be completely able bodied even though many of his abilities will not be required. There is little justification for requiring surplus abilities which are not necessary for the work to be performed.

Logic, however, is not always the final answer in our industrial world of today. It is not enough to demonstrate that the average impaired worker is as good and as desirable an employee as the unimpaired worker who competes with him for employment. What is extremely significant in the survey findings is that many firms were willing to hire impaired workers, regardless of their exclusion policies, *if they had special skills*. In ordinary and plain language, what this means is that management frequently will undertake the placement problems if the worker offers a skill and ability which management wants. That puts the emphasis on rehabilitation and training, depending on how the impairment was acquired and what, if any, existing skills is affected.

If this can be done, then there is every reason why the impaired worker can compete with the unimpaired purely on the basis of ability. He will not need to appeal for sympathy and for special considerations. He can retain his self-respect as an integral member of his community, valued for what he is and for what he can do. The facts, as brought out in this comprehensive, factual and entirely objective survey, clearly show that he can hold his own. If sensibly placed, his impairment is no handicap.

## Materials Handling Group Meets With Equipment Users

USERS of materials handling equipment had their innings recently when the Materials Handling Association of Southern California held their first annual Users meeting in Los Angeles. Customarily, meetings have been attended by the manufacturers and their representatives and their representatives and agents. Approximately 120 were present. Among the firms represented at the meeting were Firestone Tire & Rubber Company, Lockheed Aircraft Corp., Bostock Engineering Corp., Lennan Lights, Inc., Pioneer Division, Flintkoke Co., Great Lakes Carbon Co., and Fluor Corp.

The meeting, presided over by Harry G. Lundberg, of the General Electric Company, consisted of a three-part program. After an explanation of G-E's More Power to America program, highlighted by their motion picture, "Materials Handling in Receiving, Warehousing and Shipping," a panel of experts among members of the Association spoke on topics of special interest. Otto Holler, Faultless Caster Corporation, discussed "Hand Trucks and Casters"; Vincent Pence, Mailler Searles, Inc., had "Floor Conveyors" as his topic; Alden Lane, Snyder Engineering Corporation, talked about "Overhead Conveyors and Monorail Systems," and Robert H. Braun, of the Robert H. Braun Company, discussed "Power Trucks." W. O. Kyte, advertising and sales promotion manager in the Los Angeles office of General Electric, outlined the "More Power to America" program preceding the other speakers.

An indication of the interest of those attending the meeting was seen in the variety of questions asked from the floor. Discussion arising from questions included such subjects as "What is the load capacity of phenolic resin wheels on overhead conveyors?" "When is it better to use belt conveyors instead of roller conveyors?" "What is the most practical incline angle for live and belt conveyors?" "What progress has been made in the standardization of pallet sizes?" "What are the limitations of tiering palletized materials?"

## Strikes Expensive

More than $4,400,000 was lost in logging and sawmill payrolls by communities involved in the 11 boom strikes in the Douglas fir region last spring, according to the Industrial Conference Board of Tacoma. The strikes were fruitless, because they brought no change in the wage scale.

## Materials Handling Display Will Visit West Coast

Proof that gravity and power belt conveyors are an economical means of moving materials in practically every type of business will be the mission of a new display truck developed for use by the Rapids-Standard Company, Inc., Grand Rapids, Mich. The unit will make on-the-job demonstrations at Denver, Salt Lake City, Spokane and Seattle. The "Vanette" truck is arranged so that one man can handle all the equipment; even the heaviest piece, the Stevedore, Jr. belt conveyor, may be moved in and out of the truck by utilizing the adjustment mechanism on the conveyor and an overhanging line.

## Newsprint Project Dropped

Plans for further development of a newsprint mill at Longview, Wash., have been abandoned after $600,000 had been invested. As originally projected, the mill was to have cost $2,000,000, but after constructing a 60,000-yard dirt fill foundation, driving piling, building a spur track and offices, construction estimates indicated that the mill would cost more than $4,000,000. Executors of the estate of Col. Ira G. Copley, which owned majority control through Southern California Associated Newspapers, decided that the project would be too costly. Pacific Paperboard Co. had contracted to operate the plant.

# Colorado Leads as Source of Uranium Ore

THE U.S. Atomic Energy Commission's domestic uranium program is rapidly taking shape in the Colorado plateau, according to John K. Gustafson, director of the raw materials division of the commission. Also, the commission is prepared to pay prices above the minimums announced last April, where larger quantities are involved, and under special circumstances the commission will take into consideration special milling and refining costs and other applicable features.

Ore is being purchased through the commission's agent, American Smelting and Refining Company, at Monticello, Utah, and will be shortly at Durango, Colorado. Private vanadium plants are in operation and are selling the uranium by-product to the government.

"A comprehensive geological study," he told the American Mining Congress at San Francisco in September, "including diamond drilling, by both the U.S. Geological Survey and AEC is well advanced. Research on improved methods of ore treatment for uranium extraction is in progress. By mid-1949 we expect to have the government-owned Monticello plant in operation and at a somewhat later date, if ore deliveries warrant it, the government-owned Durango plant. The vanadium companies in this field and numerous other independent operators are exploring and developing mining properties or are getting ready to do so."

Ore purchases in this area under the three-year minimum guarantee are as follows for ore assaying 0.2 per cent or better, he reported:

- A price of $0.31 per pound of $V_2O_5$ up to 10 pounds of VO for each pound of $U_3O_8$.
- A basic price of $1.50 per pound of $U_3O_8$.
- A development allowance of $0.50 per pound of $U_3O_8$.
- A premium of $0.25 per pound for each pound of $U_3O_8$ in excess of 4 pounds per short ton and an additional premium of 0.25 for each pound in excess of 10 pounds.
- A haulage allowance of 0.06 per ton-mile up to 100 miles.

Thus, an ore containing 2 per cent $V_2O_5$ and 0.2 per cent $U_3O_8$ produced 50 miles distant from a purchase depot would be paid for on delivery at the rate of $25.40 per ton.

### Electric Furnace Processing of Phosphate

Electric furnace processing of phosphate may be the answer to getting the price of phosphates down so that Western farmers will no longer have to pay $60 a ton more than Florida farmers, according to C. Girard Davidson, assistant secretary of the interior.

Speaking at a recent hearing at Pocatello, Idaho, on new regulations for phosphate production on public lands, he said that Idaho, Utah, Montana and Wyoming together possess 60 per cent of the nation's phosphate deposits, yet account for only 8 per cent of the annual output.

He added that western phosphate is particularly desirable because the ore also contains a number of critically-short minerals such as vanadium, nickel, zinc, lead and fluorine.

### Cold Storage Meeting

Pacific States Cold Storage Warehousemen's Association convention at the Fairmont Hotel, San Francisco, Oct. 19-22, will be featured by a joint meeting with officials of the National Association of Refrigerated Warehouses. The latter organization is headed by Edgar M. Burns, president of Terminal Ice & Cold Storage Company of Portland. Harlan J. Nissen of Los Angeles is chairman of a national association committee revising the by-laws.


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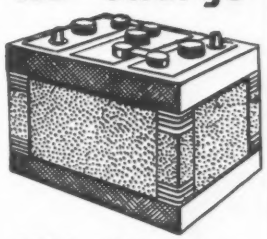

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• Aerial view of new sheet and tin mill of Columbia Steel Company at Pittsburg. In foreground are industrial relations, administration, and new hospital buildings. Left background, next to overhead water tank, is new clarification and filtration plant to purify water.

# Sheet and Tin Plate Mill Opened by Columbia Steel

STEEL facilities on the Pacific Coast were increased by about 400,000 annual tons with the official opening of the new cold reduction sheet and tin plate mill at the Pittsburg, California, plant of Columbia Steel Company on October 21.

Inauguration of the mill, newest and most up-to-date of its kind in the country, marks an important milestone in the program of additions and improvements launched by United States Steel, the parent company, after V-J Day, which involves an expenditure of more than $130,000,000 in the West, and in excess of $850,000,000 by United States Steel throughout the whole country. Members of the board of directors of the corporation came to the Bay Area for the ceremonies, followed on October 22 by an open house.

Operations of the new mill will be integrated with those of the Geneva Steel plant in Utah. Upon completion of current conversion of the Geneva plant to peacetime output, the Pittsburg mill will receive hot rolled coils of semi-finished steel from Utah for processing into cold rolled sheets and tin plate.

Addition of this new rolling capacity on the West Coast will make a substantial amount of California-made steel formerly utilized in hot-rolling operations available for increased production of numerous other products such as nails, wire rope, barbed wire and other wire mill products; for merchant bars, reinforcing bars and bar shapes. The new tin plate mill will produce plate for cans and containers both by the hot-dip and electrolytic process.

New production units include a continuous pickling line; a five-stand, tandem, four-high cold reduction mill; two electrolytic cleaning lines; 10 rectangular annealing furnaces which can be moved by overhead crane to 30 different bases; two two-stand, tandem, four-high temper mills; a single-stand, four-high sheet temper mills, and modern side-trimming and shearing lines.

Coils intended for processing into sheets and tin plate on the cold reduction mill are first run through the continuous pickling unit, where they are thoroughly cleaned. After re-coiling, the sheet is taken to the cold reduction mill, where it is rolled approximately to the desired final thickness and coiled as it leaves the mill for transfer to an electrolytic cleaning line. After cleaning and annealing, relatively heavy gage material for sheets is run through the sheet temper mill to reduce it to exact final thickness. Coiled product leaving the temper mill is run through the cold-reduced sheet shear line, where it is cut into accurately controlled sizes. When necessary, the sheets may be run through a resquaring and scrubbing line.

Steel to be processed into tin plate, after cleaning in the electrolytic cleaning line, is loaded in the tin coil annealing furnaces and, after annealing, run through the tin temper mills. After temper rolling, the flow of material is split according to whether it is to be tinned electrolytically or by the hot-dip process. If the former, it is passed through the tin-plate side trimming and recoiling lines, cleaned, electrolytically plated with tin and sheared into the ordered sizes, inspected and assorted as it comes off the tinning line. The hot-dip process involves similar steps, except that the sheets are dipped to give them a coating of tin rather than by depositing the material in an electrolytic bath.

Among the other products of the new sheet and tin mill are galvanized sheets, which are coated in an integrated line consisting of pickling facilities, galvanizing pot, washer, dryer and auxiliary equipment. This installation can handle sheets of a maximum width of 58 inches, maximum length of 144 inches, and thicknesses between 0.150 and 0.016 inch. Operating speed can be varied between 10 and 135 feet per minute.

Operation of the new Pittsburg plant will be a strictly Western operation. The mill will be staffed by Western men, of whom the supervisory staff was sent to eastern and southern steel centers to obtain the latest know-how on flat-rolled products. The steel itself is produced from Utah ores, coal and limestone.

### ICC Position on Western Rates

Apparently the Interstate Commerce Commission is finally in agreement with the California Manufacturers Association that the revenue needs of eastern railroads do not require higher rates on the Pacific Coast, it was reported at the CMA convention in San Francisco by L. E. Osborne, manager of the association's traffic department.

"In its last two decisions the Interstate Commerce Commission has rejected further percentage increases in the West," he said.

"However, the railroads are back again before the ICC, asking for another percentage increase, this time 8 per cent. Our California railroads are right there with the others. It's almost inconceivable, when you realize, for example, that in the first seven months of 1948, the Santa Fe enjoyed net earnings of $8,500,000 more than last year, and the Union Pacific's net income was $9,500,000 greater than it was during the first seven months of 1947. Each of those carriers enjoyed a net income in excess of $33,000,000 during January to July, inclusive, of this year.

"Pacific Coast railroads are proposing wholesale increases in classifications. Articles, for example, which are now classified at third class, are to be moved up to second class, other articles now subject to second class to be increased to first class, etc.

"The stated purpose is to overcome losses in railroad revenue — brought about by an order of the ICC which reduced class rates between points east of the Rocky Mountains. No class rate reduction was made west of the Rocky Mountains, either voluntarily or by order of the Commission. And yet our Western carriers want you to pay *more* for your transportation, because shippers in the middlewest have been given a break on their rates."

### Training Vital For Using Explosive Tools

The second fatality this year from an explosive power tool has caused the Division of Industrial Safety of the California Department of Industrial Safety to warn that close supervision and adequate training must be used with these tools to avoid possibility of serious accidents.

In the first case a metal stud propelled from the muzzle of an explosive powered tool deflected from a concrete ceiling, striking the tool operator in the head and inflicting fatal injuries. In the second accident a worker was attempting to drive studs into a concrete wall from his position on a ladder jack scaffold. The steel stud was deflected from the concrete wall with such force that it penetrated the skull of the operator.

The safety division says that it is especially important that the use of such tools be limited to operations not requiring the assumption of difficult or awkward positions, since such conditions are likely to result in the discharge of the tool before the muzzle is accurately placed at right angles to the surface into which the stud is to be driven.

"The protective shields with which such tools are furnished should not be removed," it was advised. "Other methods of fastening studs should be adopted in cases where the shield interferes with the proposed installation.

"Under no circumstances should the tool be used without the protective shield. This shield tends to prevent deflection of the stud in two ways. In the first place, the shield prevents the discharge of the tool when it is not at right angles, or nearly so, to the surface on which it is being used. In addition, the shield serves as a guard to prevent the ricochet of a deflected stud or the flying of wall particles."

### California Leads In Home Building

California led the national procession in home building in urban areas for the first six months of this year. Construction of 53,992 dwelling units was begun, marking an increase of 50.5 per cent over the first half of 1947, equalling the total of the next two ranking states. These figures from the San Francisco Chamber of Commerce were based on information supplied by the National Association of Home Builders, the President's Economic Report and the Bureau of Labor Statistics.

Following California's lead, Texas was second in home construction with 30,764 dwelling units; New York ranked third with 21,584 dwelling units; Florida came next with 13,437 units.

### New Truck Rates Benefit Arizona

Reynolds Metals Company have obtained new full truckload rates on aluminum extrusion products from their plant at Phoenix which they believe will save them $75,000 a year and, according to Richard W. Pickens, general manager at Phoenix, spur the development of manufacturing industries in Arizona.

The new rates will affect shipments of 25,500,000 pounds of aluminum annually, and are 10 per cent lower than carload rail rates. Harry N. Wagner, district traffic manager of the company, reports that the railroads had taken no action on a Reynolds petition that Phoenix should not pay the same rates as Los Angeles to eastbound points.

### Denver Wage Practices

A study of labor relations among 220 Denver manufacturing firms by the University of Denver showed that job evaluation systems were used by 19 per cent of these firms, time and motion study by 9 per cent, incentive systems by 29 per cent. Forty-three per cent are using some type of extra compensation plan and 11 organizations reported an annual or guaranteed wage plan in operation with additional firms seriously considering the idea.


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# MECHANICAL KINKS

## Ten Packing "Don'ts"

By W. F. SCHAPHORST, M.E.
Former Engineering Instructor
New Mexico State College

It is well known that "don'ts" are often more effective than "dos," so, here are some suggestions and warnings arranged as "don'ts" that are based on many years of practical experience. They will be found useful in connection with the selection and installation of packings. To follow them may mean freedom from trouble that would occur when even the best obtainable packing is improperly installed.

1. *Don't* fail to make clear what the packing is to pack. In other words, with what will the packing make contact?

2. *Don't* guess at a size, diameter, width, or height, when ordering packings. Many failures have resulted from small errors in dimensions.

3. *Don't* allow too little or too much clearance between follower plate and inside cup wall, or any metal parts behind any upright leather wall. 1/16 in. to 3/32 in. on each side, depending on size of packing, is usually recommended.

4. *Don't* doctor packing lips with a pocket knife or file, or batter lip in installing. A rounded lip destroys the seal. Packings can be softened by soaking in warm water if necessary.

5. *Don't* apply cup packings with flange too high for clearance at the head of the cylinder. Keep systems clean, so sediment will not collect in cylinders and wear the packing.

6. *Don't* apply cup packings to end of plunger which is badly worn; pressure will force the packing down into clearance between plunger and cylinder. Leather washers cut from old cup packings can be made to reline such equipment to proper dimensions.

7. *Don't* apply "U" packings where plungers are worn without reinforcing under heel with leather cushion rings.

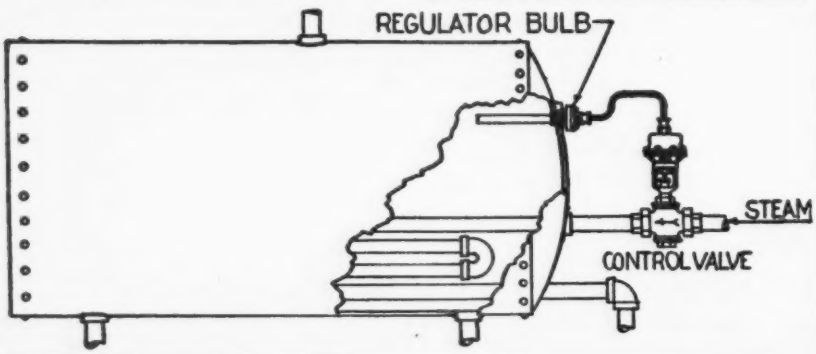
8. *Don't* look for long service on scored plungers or in scored cylinders; resurface or reline such equipment to proper dimensions.

9. *Don't* allow water to corrode cylinder walls, plungers, or rods. Use an anti-rust agent that will prevent this and that will act as an effective lubricant.

10. *Don't* squeeze hemp or fabric filled "U" packings in glands where such packings are to replace solid section compression packings; set glands up to point where "U" packings are free to function properly.

## Heating Water Tanks

In this writer's experience the simplest way in which to control steam lines up to 2½-inch diameter for maintaining high temperature in a tank of water is shown in the accompanying sketch. Place the regulating bulb in the tank, as indicated, and place the control valve directly in the steam line, also as indicated. The vapor pressure in the regulator bulb causes the control valve to open and close with variation in temperature. In this way any temperature from 70 to 300 deg. F. can be maintained in either open or closed tanks or heaters.

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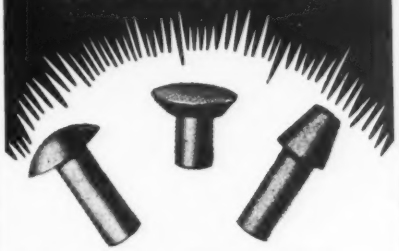

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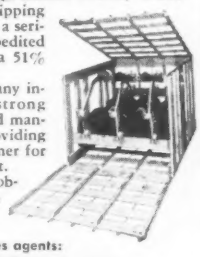

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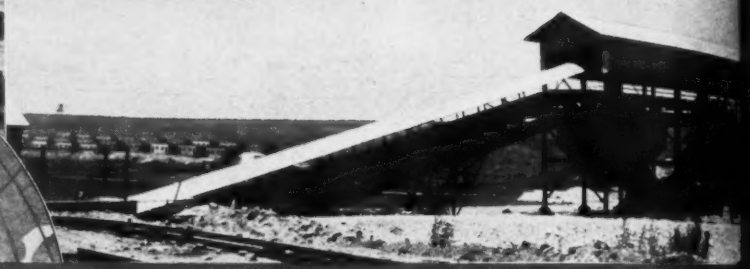

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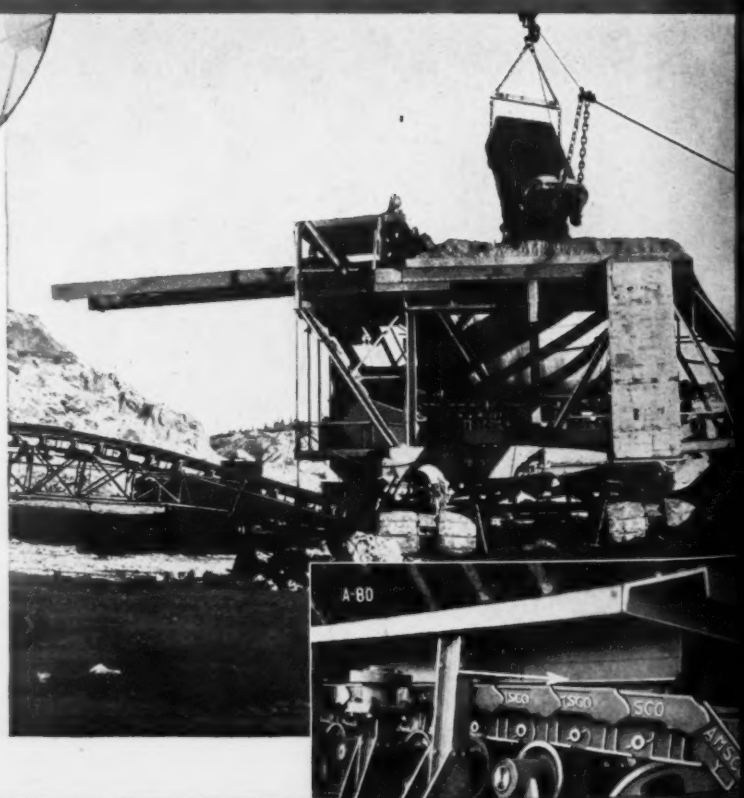


## As Well As The Home Fronts

From South Africa to Alaska S-A Material Handling Equipment is enlisted everywhere helping to mine the materials required for victory.

In South Africa, Torbanite is mined for the extraction of vital petroleum products. This pitch-like material is handled in lump, crushed and pulverized form . . . all by Stephens-Adamson equipment. The Torbanite mine illustrated above is equipped with sixteen S-A Belt Conveyors, three Redler Conveyor-Elevators and a Bucket Elevator.

On the other side of the world in arctic Alaska, more than 60 million cubic yards of overburden have been handled by this tough S-A manganese steel Feeder, shown as part of the traveling hopper at right.

World wide examples of S-A versatility and efficiency are offered in addition to the daily job done by thousands of domestic installations. If you have a Material Handling problem, investigate the complete line of S-A products.

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